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THE

California Horticulturist

AND

INV. 1898.

FLORAL MAGAZINE.

VOLUME X.—1880.

CHARLES H. SHINN, Editor.

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Ferns in a California Conservatory.

THE

California Horticulturist

AND

FLORAL MAGAZINE.

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Contributed Articles.

SOME CHOICE CLIMBING PLANTS.

By Dr. L. N. DIMMICK. Santa Barbara, Cal.

In this land of sunshine we should plant many more climbing plants. Besides their grateful shade, they add much to the beauty of home surroundings. Drape the front of the cottage piazzas with them. Let them arch the windows, and climb to the pinnacle of the roof. Construct a variety of trellises and lattice-work, and decorate them with some of the gorgeous flowering plants that can be grown so easily in this Pacific clime. Build ample rustic arbors and cover them with a medley of flowering vines, and then swing your hammock underneath and enjoy the perennial succession of floral beauty.

Among the choicest of the climbing plants are some of the Tecomas and Bignonias. The lovely Bignonia venusta is an evergreen that will grow twenty or thirty feet, throwing out numerous lateral vines, on which during the winter months are produced a profusion of rich, orange-colored flowers. With this may be grown the deciduous Chinese Tecoma (Tecoma grandiflora), as in winter its leafless vine will be concealed by the foliage and floral luxuriance of its South American relative, and in summer it will be dressed in its own garments of green and gold. Not to be excelled in attractiveness of verdure and bloom, are those Australian beauties—Tecoma jasminoides and Tecoma jasminoides rosea. If you have a favorite window by which you read, then plant them near it, and during every month of the year you can have the pleasure of viewing their graceful, delicate flowers, and glassy green leaves.

Stephanotis florabunda, with its deliciously fragrant, wax-like white petals, and satin leaves, endures our coolest weather without injury to its foliage or flowers. Mandevillea sauveoleus will for three months in each year delight you with its large white, jasmine-like flowers, but during half of the year it needs to be covered by some friendly evergreen, so as to conceal its forlorn appearance. Bougainvillea spectabilis and glabra are luxuriant growers, and during the winter season produce in profusion their beautiful rose-colored bracts. Solandra grandiflora, with its long, tubular flowers, makes a good contrast to the Bougainvilleas. With these may be grown Physianthus albeus, although its flowers are not conspicuous, yet its singular pendant fruit makes it an object of interest. The wax

plants Hoya carnosa and Hoya carnosa variegata should not be omitted. They will reward you with their fragrant umbels of waxy flowers. Jasminum grandiflorum is a fragrant flowering plant, nearly always in bloom. Wistaria sinensis, the Chinese Wistaria, although deciduous, is still very desirable with its pendulous racemes of pale blue flowers. A novelty is the Quisqualis villosa, a native of Burmah. Its cordate leaf is edged with a hairy fringe, and its yellow flowers have a resemblance to some of the orchids.

If you have a nook that can be seen but not reached, then devote it to some of the climbing Cactaceas. Pereskia aculeata, or Barbadoes Gooseberry, a novelty among the cactus family, as it possesses leaves, is a vigorous plant, and will climb ten or twelve feet and furnish an excellent background for the wax-taper-like stems of the climbing Night-blooming Cereus. The best of these are Cereus grandiflorus, Cereus triangularis, and Cereus McDonaldæ. Their flowers are grand, from eight to twelve inches in diameter, filled with numerous yellow stamens, their petals pure white, the sepals of the first yellow, of the second green, and of the third brown. These magnificent flowers last about twelve hours.

All the climbers enumerated are now growing and flourishing in the open air in this vicinity.

MY TUBEROSES.

By M. E. P. A., Auburn, Cal.

I have read with much interest the article "How to Grow Tuberoses" published in the September number of the Horticulturist. This summer witnessed, and with gratifying success, my first attempt at growing this stately and magnificent plant, known botanically as Polyanthes tuberosa. I planted its bulb March 16th, and in addition to its natural slowness in starting, the cold weather retarded its germination until about the first of June. From that time until its period of blooming, it grew in the open air. Its flower-scape measured forty-four inches in height, encircled by twenty-eight buds, six of which fully opened on August 22d. It was a superb spectacle, and the admiration of all who saw it. Surely, of all "God's smiles," as some one has so lovingly christened the flowers, there are none that beam with sweeter beauty, grace, and tenderness, than the waxen blossoms of the matchless Polyanthes tuberosa. Each snowy chalice gives forth a perfume as sweet and pure as the "virtue-flowers of faith, hope, and love," which shed their refreshing fragrance on the changing shadows of the path of life.

SHALL MORE GARDENERS COME TO CALIFORNIA?

By Leonard Coates, Yountville, Napa Co.

The reason I ask this question is that I have lately received letters from parties in England who had read a letter of mine in the *Gardener's Chronicle*, and who wish for reliable information as to the prospects of getting employment in this State. There exists a great deal of ignorance in England, especially among a certain class, in reference to California—physically, socially, and politically. The writer of one letter I received was evidently laboring under the impression that California was one of the colonies of Great Britain. But we do not need to cross the water to find misapprehension of other minds fully exemplified. What strange ideas are still dominant in the minds of many New Englanders concerning this Golden State! And all this is in a measure excusable. Our Bret Hartes, Mark

Twains, and a multitude of lesser lights, have not a little helped to spread these delusions. Such writers have cast a halo of romance about California — a romance in which bowie knives, hempen ropes, six-shooters, and big nuggets of gold figure most prominently.

I would like to see the CALIFORNIA HORTICULTURIST and the *Rural Press* well circulated among gardeners and others in England, and mean to recommend them. Some agricultural papers have been distributed in the Eastern States pretty freely, and, for aught I know, in Europe as well; but they, unfortunately, have a tendency to mislead by presenting an overplus of big squash stories, alfalfa yarns *ad libitum*, and an abundance of highly colored statistics, which may be true as exceptional cases, but certainly are not as a general rule. I call it a mistaken policy to grossly exaggerate the natural productions of a country in order to encourage immigration, and there surely can be no need for it in this State. There are thousands of persons in Europe at this time —many of them men of capital—who are comparing the inducements offered by the Great West, by Australia, and by New Zealand, with a view to emigration. The class to which I refer more especially are very numerous in England, and they are endeavoring to obtain through private sources statements in which they can place confidence, being naturally suspicious of printed "facts" (?) about the new and sparsely settled countries of the world.

These young gardeners are generally men who have an inborn love for their profession for its own sake, and are pretty well grounded in the rudiments of the theory of horticulture, of vegetable physiology, and of botany. They have, for the most part, either served an apprenticeship under a nurseryman, or under the head gardener of some estate, or worked a year or two for a mere nominal sum, equivalent to $2 50 per week without board. I will mention one example of English gardening with which I am familiar, which may, I think, be taken as a fair average. W. H. Smith, M. P., First Lord of the Admiralty (presumably the "Admiral" of "Pinafore" notoriety), owns a fine country residence and estate in Oxfordshire. His head gardener, with whom I am well acquainted, has been on the place some twenty-five years, and has under him six or eight or more young men. Rooms are fitted up for them where they may at night study the leading horticultural papers, works on botany, etc., but probably not more than one in a hundred of them has any but the remotest chance of gaining a lucrative position. On the grounds are a number of greenhouses of various temperatures; one for orchids, another for palms, ferns, semi-tropical fruits, and so on, and lean-to houses for peaches, nectarines, and choice fruits, which are too delicate to be grown with success in the open air. The grape houses are so arranged, with reference to climatology, that ripe fruit is cut from the vines every month in the year except March, which of course is done by using every power to force the earliest varieties and retard the latest. The vegetable gardens are inclosed by brick walls fifteen to twenty feet high, on both sides of which are fastened wires for fruit trees to be trained on. The walks are lined with espaliers, mostly apple and pear, which are pruned entirely with the finger and thumb during the summer months. The fruit, for protection, is often inclosed in muslin bags some time before maturity.

But what endless trouble and expense. Nature here in California will do almost

as much for us as only great wealth combined with the thorough understanding of the art of horticulture can do in the old country. If, then, nature has placed us almost on a level with the older countries, and given us so good a start with no effort on our part, to what eminence on the horticultural ladder ought we not to attain? Our possibilities—nay our probabilities—are great almost beyond conception.

THE CHRYSOMELIDÆ BEETLES.

By Walter S. Yates, Centreville, Cal.

As this family of beetles (the Chrysomelidæ) are all vegetable feeders both in the larval and perfect forms, and more or less injurious to plants, trees, etc., a short sketch of the family and a few facts concerning the migration of the most destructive member may prove of interest.

These insects are generally small and frequently of bright metallic colors. Their bodies are smooth. They are very timid, dropping to the ground the moment you try to capture them. All the larvæ of this family have six feet, and soft-colored bodies. They attach themselves to the leaf on which they feed by an adhesive secretion. The larvæ of a few species live in the ground.

If there are any who have not seen the larvæ of these beetles, they will be amply rewarded by noticing in May, or June, the willow trees which grow beside our creeks, for thousands of these beetles attach themselves to the leaves in these months.

The Colorada potato beetle (Doriphora decemlineta), which has been so destructive to the potato vine in Colorado, and in a great many States between there and the Atlantic, is the most destructive member of this family. These beetles first made their appearance in Iowa in 1861. They moved eastward at the rate of sixty miles a year, and finally separated, one division going North and another East, with an increased rate of travel. They finally reached Atlantic ports, and some of them took passage for Europe. As soon as they made their appearance in Germany, the government bought the fields in which they made their appearance and burned them. Bottles containing them in their different forms were distributed among school children and others so that they could become familiar with them. By taking these percautions the pest was soon exterminated.

The remedy for this pest is so well known, and applied with such good effect, that its appearance in a locality is not so much dreaded as formerly. Paris green is now sprinkled over the vines in the proportion of one tablespoonful to a bucket of water.

There is found in this locality a species of the genus Chrysochus, which lives entirely on seed asparagus, and of course is not injurious. The most destructive genus of this family found in this vicinity is the genus Diabrotica. Diabrotica soror, which I have mentioned in a previous article, is the most common species. Two or three other species of this genus are also found here. They are comparatively rare, but in time (if allowed to increase) may prove as destructive as the species soror.

TEA ROSES.—RARE CALIFORNIA SHRUBS.

By Gustaf Eisen, Fresno, Cal.

Mrs. Winton, in the November number of the Horticulturist, asks me to look further for the true name of her supposed "Le Nankin" rose. Indeed, if the rose in question is favored with the colors of gold and salmon, I do not know where to look at all. None of my

tea roses have that color. The darkest yellow tea roses I know of are Ophirie, La Jonquil, and Clare Carnot. I suggested the last mentioned, because that and La Jonquil are both seedlings from the same parent (La Marck). Now it would be most reasonable to think that the "Nankin" rose must be nankin colored, and as such I have seen it described; but in most of the catalogues I find it described as blush, shaded yellow, or something similar. There seems to be some confusion about the right names of some colors, and it seems that golden is one of them. In all the catalogues where La Jonquil is offered it is described as "the darkest yellow tea known." And Marechal Niel, which certainly is several shades lighter, is unhesitatingly described as "deep golden yellow." Now did the author of such a description ever see a piece of gold? or did he use this word only in place of something better? If the name of golden could be applied to any roses at all it must be to "Persian Yellow," and "Harrison's Yellow," but they are too well known to be mistaken for teas.

I also have a rose which has puzzled me very much. I got it labeled "Jean d' Arc," which was evidently wrong. The outside of the petals are pale orange, shaded darker; the inside orange deepening toward the centre to peach. The flowers are of medium size, very full and pendulous, so much so that they are really turned upside down. Another peculiarity of this rose is that the buds before opening are perfectly egg-shaped, and even the open flower has never or rarely the petals turned backward. The plant is rather a dwarf grower. This rose, with all its drawbacks, is one of the finest teas I have, and I would be pleased if Mrs. Winton or some other of the readers of the HORTICULTURIST could give me its true name.

It is only a too common thing to get roses and other plants wrongly labeled. A neighbor of mine sent some time ago to a rather prominent nurseryman for one dozen carnations of as many different colors. To her great despair they were all of one color — red. Now this seems to be a "regular" mistake, because another neighbor who did the same thing received only eleven plants, which all turned out white. I myself have also some experience in this matter. Last year I had occasion to order from an Eastern firm four different times, and each time I got as premium a rose labeled "Marie Van Houtte." When they blossomed one was "Saffrano," one "Anna Olivier," one "Therese Lot," and one only true to name, which latter evidently was a mere chance. Now we politely ask, Messrs. Nurserymen, is this right? and is it absolutely necessary to mix your labels to such an extent that it is necessary to send for the same plant two or three times so as to get it true to name?

But, Mr. Editor, I must talk about more pleasant things. Here, in the very heart of California, in the driest and warmest of climates, who would think that our hills and cañons shelter some of the very finest flowering shrubs that can be found anywhere, and many of which are not yet introduced in garden culture? If in the month of May a traveler from the dry and dusty plains proceeds up one of the lower tributaries to King's River, he will be most delighted at the beauty of the floral display which covers the hills at the altitude of about 3,000 feet. Nowhere in the world have I seen anything equal to it. The chaparral consists here of at least twenty different species, many of which would be worthy of a place in the choicest garden. Most prominent is the rare and lately re-discovered

"Carpenteria Californica." It is magnificent with its hundreds of large snow-white blossoms on a background of deep green, laurel-like leaves. Here and there, between the leaves, you trace the outline of the perfectly straight and slender stems, covered with the finest paper-like, yellowish-white bark. In this vicinity you meet with the beautiful Yerba Santa (Eriadyction), whose spikes of lilac-colored flowers so well contrast with the snowy white of Carpenteria. The "Fremontia" is also common everywhere, and its stems are literally covered by its large yellow flowers, which greatly resemble the yellow pond lily in color and size, but with its pointed petals is of a far more beautiful form. And what shall I say about the minor blossoms on the ground. We meet here with every shade of color, size, and form, from the bashfully hiding Anemone, with its tender blushing petals, to the most gorgeously colored Mentzelia crocea, whose really golden petals deepen towards the centre to the most intense crimson-maroon, and whose stamens resemble a long, golden tassel. And still, how many pass these floral beauties by without a look or without any enjoyment of this, the richest gift of nature. Perhaps it was about them that Wordsworth sung:

"A primrose by the violet's rim
A golden primrose was to him,
And it was nothing more."

PENTSTEMONS OF SOUTHERN CALIFORNIA.

By Samuel B. Parish, San Bernardino, Cal.

The species of Pentstemons are very numerous, and are well represented in all parts of the State. They include plants where flowers are unequaled in brilliancy of color by any of our other native plants. They present a great variety in habit and general appearance; some are almost bushes, others trailing, or semi-scandent; some have large, shining leaves, others narrow, linear ones. The flowers also vary in shape, from narrow tubular, or long funnel form, to open campanulate, and in color from scarlet to blue, purple or yellow. Of Southern Californian species all the scarlet-flowered ones are of the tubular form, and those of other colors bell-shaped. In one thing they all agree: whether growing on mountain or plain, all choose a dry soil.

With few exceptions, our native Pentstemons are as easily cultivated, and far handsomer, than the "choice French hybrid varieties" offered by seedsmen and florists. Being very tenacious of life, they readily endure transplanting from their native homes at almost any stage of growth, and they may also be easily grown from seed. They are, for the most part, of good form, vigorous in growth, and free and showy bloomers. They prefer a somewhat sandy soil, and an abundance of sunshine, and the brilliancy of the color is increased if they are not too freely supplied with water. The flower stems should also be cut back as soon as seed begins to form, in order to prolong the season of blossoming.

The following list includes most of the species found in the lower part of the State:

P. spectabilis is one of the finest species, growing abundantly on low, dry hills; quite bushy, sometimes five feet high. The loose, branching panicles are two feet long, with many large ventricose flowers, of a lovely purple color, the lips a fine metallic blue, of the easiest cultivation, when it continues in bloom from March till November.

P. Palmeri somewhat resembles the above in habit and foliage, but does

not exceed three or four feet in height. The panicle is also somewhat smaller, with wide campanulate flowers nearly white, the lower lip and throat marked with purple. It is not rare at elevations of five or six thousand feet, where it often forms thickets on the banks of dry gulches. A fine plant for the garden.

P. azureus is found at about the same altitude as the last named species, but is here much rarer. Its decumbent stems are about two feet long, covered with abundant linear leaves, and producing a panicle eight to ten inches long, of rather flat, bell-shaped flowers of a very fine azure color. It is very satisfactory in cultivation.

P. antirrhinoides is remarkable for its yellow flowers, which are sparingly borne in small, leafy panicles. The plant is shrubby, about four feet high, and is found in low, dry hills. It is the best showing of any of the species found in this region.

P. ternatus is also a rather inconspicuous species. It is found at an elevation of two to four thousand feet, on bushy mountain sides, where it can find support for its weak and slender branches, which attain a length of twelve feet. Its narrow, tubular flowers are an inch long, and of a dull red color.

P. cordifolius.—Although this is also of a trailing habit, it bears no resemblance to the foregoing. Its slender, woody branches seldom exceed three or four feet in length, and usually hang over the steep sides of dry, rocky banks. It has handsome cordate foliage, and the flowers, which are produced in small leafy panicles, are large, wide, funnel-shaped, with a prominent upper lip, and of a bright scarlet color. It is very difficult to cultivate, but might do well on dry rock-work.

P. centranthifolius is an abundant and beautiful species, growing to the height of two or three feet, on dry bench lands. It produces many long, narrow panicles of bright scarlet flowers, which are sometimes called "Scarlet Honeysuckles," from their supposed resemblance to the "Coral Honeysuckle." It is very easily cultivated, and continues in blossom for several months in the spring.

P. Bridgesii might at first glance be thought a remarkably fine specimen of centranthifolius, but aside from the marked botanical differences, a second look will show that the tube of the flower is larger and wider at the mouth, the panicle more densely flowered, and the color a more vivid scarlet. It is the finest of the red-flowered pentstemons, and in this region the rarest of all. As it is a native of the higher parts of the mountains, it would probably be hardy in any but the severest climates.

P. barbatus, var. labrosus, in spite of its long name, is a very beautiful plant. It is about two feet high, and bears a slender panicle of large scarlet flowers, tubular in shape, but somewhat expanding toward the mouth, and with long lobes. It is found at about the same altitude (7,000 feet) as the last named species, and is easily cultivated.

EXPERIENCE WITH TEA PLANTS.

By Isaac Collins, Castro Valley, Alameda Co.

In Philadelphia, in 1858, we had two large plants of the tea (one Thea Bohea, and one Thea Viridis), which were planted out in the open ground in summer, taken up when winter set in, and stowed away under the stage of a greenhouse. They flowered, matured seed, and did well.

In South Carolina, a number of years ago, I grew a few tea plants out of doors. The practice there was to par-

tially shade the young plants the first season. They grew very fast, making good sized bushes in three years.

At this place (Haywards), in the autumn of 1876, I obtained one-fourth of a pound of tea seed from a San Francisco seedsman, and planted it in a bed of loam. The young plants were transplanted the following spring in ground having an open exposure. Towards the end of spring, and the beginning of summer, the plants kept dying off. (I suppose they required shade.) I moved two plants to a sloping bank, and shaded on the southern side. These plants lived, and are in a healthy condition at the present time; but they grow very slowly, and are only fifteen inches in height, with a stem of less than one-fourth of an inch in diameter. They have been well cared for, but have received no water artificially. If grown under a system of irrigation they might succeed in California, but without that their growth even on good land is poor indeed.

You are no doubt aware of the fact that a German a few years since started a tea plantation in one of the upper counties of this State, imported skilled Chinamen to carry on the undertaking, and signally failed. The supposed cause of failure was the mineral nature of the water used. Mr. Brennan, of Calistoga, Napa County, some years since, planted a tea patch of some size on his estate at Calistoga. At first they were put on low land, but did not succeed, and were moved to a gentle hillside. There they found Ingersoll's paradise, a non-existence, in a very brief space of time.

In the United States Agricultural Reports on the Tea plant, the experience of experimenters demonstrates the fact that young tea plants want shade until the growth of the leaves is sufficient to shade the stems of the plants, and then they grow fast and finely in most of the Southern States East.

A HANGING BASKET.

By T. S. Price, Riverdale, Fresno Co.

This is indeed an "age of progress," and I am glad to see that it comes home to us in our domestic arrangements and the adornment of our homes. I was very much interested by Miss Crane's description of a rustic box, in the November number of the Horticulturist, and I expect to profit by her example.

Allow me to suggest a very pretty hanging basket, a description of which I have never seen in print. Take a large cocoanut shell with the top sawed off, as is usually done for eating the meat, and drill three small holes at equal distance around the top edge. After this, drill quite a number of small holes in the bottom and sides. Into each of the three holes first drilled insert the end of a piece of small wire, leaving each piece two or three feet long; join these, twisting them together at the end, forming a loop or ring, and the basket is complete. The object of the holes in the side and bottom is to prevent the shell from cracking. Care should be taken to thoroughly moisten the dirt before putting it in the basket, as the danger of cracking will thereby be lessened. Owing to putting the dirt in dry, my first effort resulted in breaking the shell. Other adornments might be added in accordance with the taste of the constructor.

Has anyone tried this before? If so, let me know your success.

Questions concerning the Prœparturiens Walnut come to us frequently. It is undoubtedly a good variety, and we have been pleased with the specimens which we have seen.

THE UNIVERSITY EXPERIMENTAL GROUNDS.

By W. G. Klee, Berkeley, Cal.

As it perhaps may be of general interest to the readers of the Horticulturist to know a little of the experimental garden at Berkeley, I shall attempt to give a short description of the place, and a few general remarks on its products, leaving it to persons more specially interested to consult the Reports of the Agricultural Department, which probably will appear before long. Before going any further, let me call your attention to the aims and objects of gardens of this kind. Experimental economic gardens are to be found in all older countries, where the objects are chiefly those of serving as illustrations in connection with the study of agriculture and horticulture. Besides this, they are the fields for such experiments as the scientific development of these studies require, and they greatly assist in the introduction of new species and varieties of plants. The garden at Berkeley has these aims, and the latter is receiving as much attention as the small means at command allow.

The economic garden proper is situated at the western border of the University grounds, bounded by a creek on one side, thus affording natural drainage. The soil is a good loam, and has been only partly cultivated for several years. It is divided into squares, bounded by five feet walks and ten feet drives, which latter serve also to separate the irrigated from the unirrigated plots. A whole half or one-third square has been utilized for Indian corn, the various sorghums, and other large-growing forage plants. For plants of less importance the squares have been divided respectively into 4x10 feet, 4x6, and 4x4. The first size have been chosen for plants of more strictly agricultural importance, as forage plants, root crops, textile plants, and oil plants; the medium size serves for useful plants of the garden, generally reckoned to belong to the kitchen garden, the boundary line of course being very hard to draw; and, finally, the smallest plots are occupied by medicinal plants and other plants for the study of agricultural and botanical classes. These latter plants find but a temporary place here until a location for a strictly botanical garden has been found. So much for the arrangement, now a little on the contents of these plots.

Of eight varieties of Sorghums, Egyptian Corn, and Sugar Corn, Broom Corn included, two varieties of Sugar Cane — the Amber (Kennedy's), and Iphee—have shown themselves specially adapted to our climate, as they are still green and sugary when the others are getting yellow and tough. None of this tribe have received irrigation except a few late planted plots. The white Egyptian Corn has hardly ripened a single seed, while the brown variety has ripened a number, not, however, in paying quantities. Here, in adjoining plots, is also growing the Teosinte, or Reana luxurians, a grass from Chile, which is recommended in highest terms. It deserves its name, for each plant forms a thick tuft four to five feet in diameter by two feet high. It has not bloomed yet. It may get through the season without irrigation, but it does not grow very fast here.

In the middle of the garden are situated two clover plots and two grass plots, one of each kind on each side of the drive. They contain, or did contain, twelve kinds of grasses, and twelve clovers or clover-like plants; they have been treated exactly alike, except that the two on one side of the drive, one

clover and one grass plot, have received no irrigation. Of these all the perennial grasses have survived the season. Orchard Grass, Dactyles glomerata, Holeus lanatus, Soft Meadow (here called Mesquite Grass), and even Blue Grass, show signs of growth. Of the clovers, likewise, all the perennial sorts have survived and are recovering now. Included among these grasses is found one of the best of recent introductions, Panicum spectabile, sold in the East by the name of West India Green Valley Grass. The plants, now four feet high, with from fifteen to twenty stalks, have sprung from a small rootstalk not larger than the end of a thumb, and shows by irrigation still better results. If raised from seed, it is of finer quality, and grows more compactly; but the mode of raising it from rootstalks is of course the least difficult.

The lesson taught by these little beds appears to me very important. They show that land along the coast in the fog belt might by some care be clothed with a sward of some perennial grass or clover, which not alone would lengthen the season of pasturage, making it more constant, but would also prevent the spread of weeds. Already several farmers have by experience come to the conclusion that this is practicable on a large scale, and hundreds of acres are now being planted with orchard and rye grass. The experiments here show that the choice need not be limited to these.

Of root crops, potatoes did poorly; beets and kohlrabis well; turnips, much affected by the beetles. The so-called Jerusalem Artichoke yielded enormously. All these were without irrigation.

Only hemp and flax succeeded among the textile plants. Jute was a total failure, partly due to the flea bugs and partly due to the cold weather in spring. Cotton is blooming now, so the result may be anticipated.

Flax and castor beans among the oil plants succeeded well. The sunflower was affected by the beetles. The beneplaw (Sesamum) will doubtless be too late to ripen seed, and it also suffered from the cold weather. Three varieties of Mountain Rice have been cultivated, one of which was fully headed out six weeks ago, but suffered from the last cold snap. It is however ahead of the Carolina Rice, which, though planted a month before, does not show signs of heading yet. Another season, and earlier sowing, is needed to decide whether it can be successfully grown here.

Two varieties of beans from China should be mentioned. The first has very small inconspicuous flowers, but is a great bearer; the other has large, bluish flowers, but is growing yet. It might be used as vetches for green feed. Both varieties require less water than any other beans here tried, but two or three months' longer growth is necessary to mature seed. A Chinese variety of buckwheat seems to be worth introduction. An early planting proved its resistance to frost, and a late planting showed its endurance of drought. The yield far surpassed that from the California seed of the common variety. Lastly, among the important introductions, I must not forget the Penicellaria spicata, Pearl Millet, or East India Millet, the much spoken of forage plant. It grew to the height of five to six feet without irrigation.

The collection of medicinal plants comprises a number of species, among which the Colocynth attracts every one's attention by its melon-like appearance, but no fruit has yet reached maturity. The department of medicinal plants will next season be increased considerably. Still the gathering of

such plants is very slow, as they are not to be had from ordinary seedsmen; and I may here ask the assistance of all interested in our work. We would especially welcome the seeds of native plants from different parts of the State, which have a local reputation, or are positively known to be of use in the Materia Medica.

CLIMATE AND BULBS OF SAN BERNARDINO.

By W. F. PARISH, San Bernardino, Cal.

The wish expressed by Mrs. Winton is, I think, often felt by lovers of flowers. We have all in a greater or less measure been groping in the dark for knowledge of plants, each one by themselves. I also have often wished and hinted in vain for information as to plants that are suitable to our climate.

You may say our climate extends from San Diego to Crescent City, and we can give no rule which covers all that ground which includes the fog belt of the coast and the dessicating air of the deserts. Leave the deserts out, for they are a tender subject with us of the lower tier of counties. Although we own the most of them, yet many of us would be glad to sell out at a great reduction.

The rest of the State might be divided practically into four principal divisions: (1) One central, taking in the bay counties as far south as Santa Barbara. (2) The southern division, which extends to the Mexican line, including all the lower plains. Then comes (3) a line along the coast up to the Oregon border. Then (4) a strip of inland mountainous country the whole length of the State. This it is impossible to classify, as the climate varies with the elevation. Here with us it is graded from sheltered nooks, where frost never comes, to high valleys, where ice forms every month in the year. These general divisions are not arbitrary, as they vary according to remoteness from the influence of the coast winds, distance north or south, and local causes; still I think they assist one to form a correct idea of our climate. If one hears of a plant that does well in some part of his division, he may hope it will also prosper with him.

Here, in our valley of San Bernardino, the sun is so hot and the wind is so dry that I consider it useless to attempt the growth of such plants as Azaleas, Rhododendrons, the Heaths, and all plants requiring a moist atmosphere. Here the Fuchsia requires heavy shade, and is hard to get along with; Begonias the same, so far as I can learn. I tried a dozen tuberous-rooted ones in the open ground exposed to the sun. All failed, for it was too hot. Near them I planted Imatophyllum minatum, and it was roasted. I have tried several Begonias, Coleus, Gymnastochyums, besides others which I can not at present recollect. All were failures. Apparently it was too dry. But I am not content to sit down in sorrow and say "impossible." I will see if I can not find the why.

Of bulbs, Tulips are a partial and Crocus a perfect failure. Hyacinths, though charged with being a failure here, do well with me. I think the reasons for the want of success with most are too heavy soil, and too late planting. Plant in November or December, and use plenty of sand dug in if your ground is heavy. Tigridias have to be moved about every other year, they increase so fast, and this climate just suits them. All the Narcissus family do first rate. I have two sorts that bloomed last spring and are in bloom now; whether they will continue to bloom in the fall I am not prepared to say, not having tried them long enough. Zephyranthes, alba and

rosea, do splendid. Z. rosea is one of our finest bulbs, hardy and in bloom almost continually. I am surprised that they are not more generally cultivated; they repay what little care they need better than any other bulb I know of. In fact, they will grow without care. Bravoa geminiflora does well. The old-fashioned Snow Drop, with its green-tipped bell, blooms regularly about February, at which season the Hyacinths should be on hand. Agapanthus umbelatum and Caladium esculentum are both hardy here—the tops get nipped by the frost, but not to hurt the bulbs. The same may be said of others. All these can be left undisturbed in the open border, unprotected, without risk; plants that stood last winter unprotected may be depended upon.

I have besides many hardy and greenhouse bulbs, quite a number of which stood uncovered during the past severe winter, but until further trial I do not wish to express an opinion. Gladiolus, it is needless to say, do well, and are handsomer than I have seen elsewhere. They seem to luxuriate in our hot sunshine. Callas and Cannas grow wherever you put them, the latter especially loves the summer heat.

PÁJARO.

By Matty Gally, Watsonville, Cal.

The glowing straw-fires circle round
The valley's dusky verge,
And mournfully the night winds sound
The bearded barley's dirge.

The guardian mountains closer draw
Their wrinkled shoulders up,
The lonesome crows their sorrows 'caw,'
Not knowing where to sup.

A misty line lies round the hills,
Yet fears to touch the fires,
And darkly hangs above them, till
Each smokily expires.

And then the fog-bank settles down;
The stars go out of sight;
Although Diana's radiant crown
We dimly see all night.

And so we turn within and think
How pleasant is the glow
Of hearth-stone fires that lazy wink,
At faces that we know.

December 23d, 1879.

FARM NOTES FOR JANUARY.

The Vegetable Garden needs attention this month. Sow parsnips, peas, cabbages, beets, turnips, radishes, onions, and all hardy vegetables. Either make narrow beds, which can easily be weeded from the path, or else sow in long rows which reach far enough to allow of the use of a cultivator. The old-fashioned square beds as large as a house are out of date. They never had anything commendable about them. A long, narrow bed, say five feet wide, is much more satisfactory to all concerned. And please do, if you have the fear of the housekeeper before your eyes, please do plant a plenty of peas. Plant them early and late. Plant Landreth's, or Carter's, or some one else's "Extra Early;" plant Marrowfats, and Blue Peters, and Tom Thumbs, and Alphas, and Wrinkled Sugar, and everything else you can find or dream of. We know a gentleman—a very enthusiastic horticulturist—whose agony is strawberries, and he buys every variety he can hear of. Now why would not peas be as desirable a hobby? Ask the housekeeper, who should indeed be consulted on all matters pertaining to the garden. There are some people who admire carrots. It is a very well behaved vegetable. But allow us to remark that, before you sow the seed, you must let the weeds start in the ground, and kill them all with the harrow or rake, then sow at once. Sow thinly, and cover lightly, just before a

rain. Try some Salsify, and White Co.'s Lettuce.

Permanent Vegetables —Under this head we should consider that such things as rhubarb, called pie-plant, came. There should be, on every farm, a portion of the garden set apart for matters of permanent value—vegetables which do not need renewing every year. The asparagus bed, the rows of pie-plant, and of horse-radish, the herbs, in neat clusters—all these are of the utmost importance. This is the time at which to attend to procuring these things, if not already in the garden. There should also be a few hop vines, for the beauty of the vine itself, as it trails over trellis and fence. Asparagus and pie-plant roots are best bought at one year's age, older plants not being so good to plant out. Set pie-plant four feet apart each way. We have seen nail kegs placed over the crown of the plant so as to make the stems long and brittle. Good rich soil and high cultivation makes all the difference in the world with pie-plant, as also with asparagus. Cultivation is everything.

The Orchard.—Pruning is all in full blast in many places, and some orchards are fully trimmed already, and the branches hauled out to be burnt, or piled into some gulch or ditch. The pruning tools are a saw, hatchet, large shears, and pruning knife. All these must be sharp, and kept so. The saw must have a narrow blade, so as to be used in the forks of limbs, and in difficult places. It should be set wider, so as not to clog with the damp saw-dust. A very useful little saw of French make is intended to be used where one has to reach up, and its cutting stroke is given by pulling it towards you, instead of pushing it away, as in the ordinary saw. The hatchet is to trim off the branches, and save the best for firewood, and, in a few cases, to help in pruning the tree. It will not, however, be found desirable to use the hatchet much in the actual work of pruning. The pruning shears are a useful instrument which every orchard needs. The simplest and strongest styles are the best. There are so many different kinds of shears in existence that it is an endless task to choose among them. But the best is, as we have said, that which is the simplest. Do not strain a pair of shears by attempting to cut too large a limb, and in cutting limbs avoid lateral motion as much as possible, as notches are often broken out of the blade in just that way. The pruning knife, always an adjunct of orchard work, is most important among young trees, where shears and pruning knife do most of the work. In our climate it is not so important to cover the wounds, but it is, nevertheless, a good plan. Paint can be applied to the end of a large limb, but the best article is a thin coating of grafting wax.

In the Field.—Every farmer thinks he knows how to turn a furrow, but still there are a good many ways of performing this operation. It looks now as if the season was to be a wet one, and, on the whole, favorable to the agricultural interests of the State. Do not let your haste to be at work again after rainy days, cause you to handle the soil when too wet. That were penny wise and pound foolish. In a wet season, so many good farmers say, it is not best to lap the furrows too much. Leave them open for better drainage. Deep plowing is best on most land; rotation of crops is good for all soils and at all times. This season Los Angeles is greatly increasing her acreage of wheat, and lessening that of barley. Flax will be more largely planted. In this month, if one travels over the

length and breadth of this State, there are toiling teams breaking the new soil; great gang-plows turning the young grass out of sight, and seed-sowers following after to fling the bright grain in wide circles. It is a work which ought to content any man. Though it is hard toil, yet it is healthy and hopeful, and it is under the wide sky and the free winds of heaven. The farmer's lot is not least in this busy world of men.

SELECTIONS FROM OUR EXCHANGES.

We see it stated that saw dust and ashes sifted over the beds will destroy the slugs.

Bouquet Holder.—A suggestion in the *Rural New Yorker* pleases us. It is for making a bouquet holder of the glass balls used by sportsmen to shoot at for practice. These can be procured at a gun dealer's for a few cents. Suspend them by a cord, fill with water, and put in a few choice flowers.

General Bidwell and his wife have just returned from a trip across the Sierra Nevada Mountains, visiting many points of interest, but they found few flowers except asters and solidagos. Next spring we are promised a list of the flowers in the vicinity of Chico, for which we shall be duly grateful.

A friend writes us that there is a Japan Persimmon tree growing in the open ground at Flushing, Long Island, and another near Rochester. We hope there is no mistake on this point, as so much has been said respecting the hardiness of the Persimmon that proof *pro* and *con* is now in order.

Orchids in the Open Air.—At the October meeting of the Germantown Horticultural Society two species of Stanhopea were exhibited in bloom, filling the hall with their delicious odor, and which plants had been simply hanging out in their baskets on the branch of a tree all summer. They were exhibited chiefly to show how easily this class of orchids can be grown. — *Gardener's Monthly.*

Fontanesia Phyllyræoides. — I note this shrub not only because it is a valuable and neglected plant, but because it is somewhat remarkable for being tender in England and apparently hardy in America. It is related botanically to several well-known shrubs, like the Forsythia and lilac, and has attractive foliage, not unlike some varieties of those genera. The flowers are yellow and not specially striking, but they bloom in August, which is a decided advantage. In view of these qualities, this fontanesia should be borne in mind by lawn-planters — one of whose special aims should be to exhibit as large a variety of flowering plants as possible, and particularly to exhibit them throughout the summer.—*Samuel Parsons, Jr., in Country Gentleman.*

Scale on Trees.—The *Florist and Pomologist* recommends Methylated spirits applied with a camel's hair brush; for mildew and red spider use naptha and water, and syringe.

Lapagerias Out-of-doors. — These beautiful plants will succeed in the open air against a sunny wall. They should be planted in turfy loam and sand, and be afforded plenty of drainage and plenty of water during dry weather. Their shoots should be trained over a wire trellis, under the roof, and when once established they will yield long garlands of waxy white or rose bell-shaped blossoms.

Fruit Production in the U. S.—In *L'Illustration Horticole* is an article upon

North America. They say "The geographical situation of the United States gives to this great country the most varied climate, where the fruit trees of the entire world can be cultivated, each in the latitude which suits it." After giving some tables of the amount of fruit produced in the United States, and stating that New York exports as much as 1,500,000 tons of apples in a year, the writer adds: "On seeing these figures, one thinks, if North America menaces us by the competition of her wheat, she is no less dangerous by the great production of her fruit trees, and our orchardists will perhaps soon have to sustain a terrible rivalry."

Euphorbia Juice Preserving Iron from Rust.—The protection of ship bottoms from corrosion has proved a difficult problem to owners; but the fortuitous discovery that the juice of plants of the order Euphorbiaceæ preserves iron from rust, is likely to be usefully applied to the preservation of those portions of ships below the water line not only from corrosion, but from fouling. It seems that during the survey of Natal, some two or three years ago, one of the officers found that, when certain plants of the order named were cut during the clearing, the knives were firmly coated with the abundant gum which exuded from them, and that the knives thus coated did not rust. In consequence, experiments with the gum in question were afterwards made by Sir Andrew Clarke, who some two years ago had a sheet of iron coated with it immersed in the waters of the Chatham Dockyard, where everything becomes rapidly foul. On being taken out it was found to be quite clean. The gum is intensely bitter and poisonous, which prevents the adhesion of animals to any substance which may be coated with it, and as the plants supplying it are found in abundance on the sea side in low latitudes, even if this agent should prove only moderately efficacious it may prove of great service to the shipping interest.—*Iron.*

The Cistuses or Rock Roses are the subject of an interesting article in the *Garden*. The plants of this genus are natives of Southern Europe. They are evergreen shrubs, varying in height from two to five feet. They produce freely flowers which last each one but a day, but are followed rapidly by others and continue in bloom about three months. The flowers in some species are white, in others reddish-purple, or white with red bracts, or white tinged with rose color. A resinous gum, known in commerce as "labdanum," used both in medicine and perfumery, exudes from the leaves and young branches. The shrub is said to be of easy growth, and being a native of Southern Europe would probably do well here, and be very ornamental with its evergreen leaves and white flowers.

The importation of foreign green fruits into New York, says the New York *Tribune*, has more than doubled in ten years. Oranges have not increased much, the average number of Mediterranean being 160,023,487 for ten years, and 168,705,520 for 1878; while of West India 12,942,675 were received last year, the average for ten years being about 50 per cent. more. Florida fruit comes in competition with the latter. Of lemons, the increase in round numbers has been from 85,000,000 to 217,000,000. There were 42,000 barrels and 12,000 half barrels of grapes received last year. The total value of green fruits received in New York in 1878 was $3,635,050, the duties $666,016.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

THE MILD AUTUMN IN INDIANA.

EDITOR HORTICULTURIST—Dear Sir: As our fine warm fall weather has probably ended, or at least as we have had a few days of cold, frosty weather, with a freezing snow storm within the past forty-eight hours, perhaps you would like to hear from our particular locality. First, I would say, we have had the most pleasant weather for the past six weeks I have seen in many a long year, but our warm and pleasant September and October of course means dry weather, and as a result we now have a prospect of winter closing in upon us with our wells and cisterns dry, or nearly so, while all our streams are so low that navigation is practically suspended in the larger ones, and the smaller ones barely furnish water enough for stock. Perhaps I might say that we did not have a frost heavy enough to kill coleus and heliotrope standing in the open ground until October 26th, which is something very unusual for our climate. There were several light frosts all around us for a month before this, but each time the sky being cloudy over Richmond we escaped the frost.

Few people ever saw such a general flowering of trees, shrubs, and plants, as has been witnessed this fall. It is no very uncommon sight to see an occasional fruit tree bloom in fall, but this year in addition to the apple, pear, cherry, etc., which are probably the most accustomed to do so, we have had a plenty of examples of Plums, Lilac Charles X, Spirea of several varieties, Deutzea gracilis, and some of our market nurserymen have had a fall crop of ripe strawberries, and half grown plums and pears. As usual, my Cydonia Japonica has had its periodical spells of blooming, and is now in full bloom as well as with a good supply of fruit. Taking it altogether, we have had a very remarkable season—big crops to reward the producers and lots of strange freaks to interest the curious.

Can you let me know those who are collecting either plants to sell, or botany for study on the Pacific Coast during 1879? I do not know where to obtain the information, or would not trouble you with my questions.

L. B. CASE.

Richmond, Ind., Nov. 3d, 1879.

[Botanical students, collectors of plants, or persons who are engaged in the business of collecting them for sale, will greatly oblige us by forwarding their names to this office. This invitation also extends to seed and bulb collectors.—EDITOR HORT.]

JAPAN PERSIMMONS AND CALIFORNIA GRAPES IN MISSOURI.

EDITOR HORTICULTURIST—Dear Sir: I am late in acknowledging the receipt of an invitation to be present and participate in the formation of your State Horticultural Association. In doing so now, I can only express regret that my engagements here prevented me from enjoying the pleasure of participating in so desirable and necessary an undertaking in a State in which I cast my first vote—and that for the State's first Constitution.

Although your magazine is devoted wholly to the interests of horticulture in your own State, where the soil and climate differ so much from ours, yet there are so many things in common to

all sections of our country, that I find much of its contents of great profit to me as a horticulturist, and I read it with great interest and pleasure.

Last spring, I received from Shinn & Co. two Japan Persimmons, which were late in starting, but which have done well since. A few days ago, after the thermometer had sunk to 16½°, I bound one of them with straw, which was situated on the south side of a grove. The other, on the west side, I have left unprotected to weather the winter through. We have had a great many of these persimmon trees brought to this section by Loomis and Alexander, but I think their vitality was seriously affected by delays and exposures on their way here, and hence they succumbed to the unusually severe weather of last winter. So far, it is doubtful whether the kaki can stand our climate.

I also procured last spring, from a friend in Sonoma County, choice cuttings of the Black Hamburg, Black Prince, Mission, Tokay, Muscat, Sweetwater, Zinfindel, and a variety of the Chasselas grapes. I grafted these on four year old Taylor Bullet stock, but in my anxiety to graft as high as possible (cleft grafting) so as to prevent the grafts from taking root, I have succeeded in getting only three or four of each variety to "take." These, however, have done remarkably well, making a growth of wood of from eight to fourteen feet in length, with a good number of laterals, and have borne from one to four bunches of grapes each. A bunch of the Chasselas, which I exhibited to some of the vignerons about St. Joseph, weighed over one pound. Grafting on the Taylor insures exemption from all trouble in regard to the roots. One of the causes assigned for the failure of the vitis vinifera here is the settling of the dew on the foliage. The sun striking the leaves before the dew is off, scalds them and causes the foliage to shrivel up. To counteract this, I have grafted the vinifera on hardy vines growing on a western slope, and grow in addition, in alternate rows, rampant native varieties—the rows running north and south—so that the dew will be evaporated before the sun can strike the vines. If I find any more protection necessary, I propose to stretch two wires—one on either side of the posts—near the top, and on them place a sort of tin, sheet-iron, or other covering, to protect the vines from our intensely hot noonday sun. This year, however, the foliage of the vinifera has not been affected in the least by the sun, or any other cause, but remained healthy looking until the frost of October 22d came. My vineyard is about 250 feet above the Missouri River, and on the bluffs. Frost appears from two to three weeks earlier down in the valley than it does with me in autumn, and nearly that much later there than with me in the spring.

Last week I pruned the exotic vines, and covered them with clear soil. I might mention that I put paper bags over the growing bunches of the Black Hamburg, and the bunches all rotted. Whether they would have done so without bagging, I can not say, but on no other of the exotics did rot appear. I am experimenting with figs and other semi-tropical fruits, and hope, by giving them winter protection, to be successful with many.

Yours truly,

Jos. S. McAleer.

St. Joseph, Mo., Nov. 7th, 1879.

Hints as to the Hardiness of Plants. —Editor Horticulturist—Dear Sir: One great desideratum for all new counties is the knowledge of what is

hardy or will probably prove so. Much of our time and money—never plenty with new settlers—is spent in blindly testing things we hope or fancy may prove liable to stand our cold in winter and our heat in summer.

Much aid may be gathered from articles, where the names of plants usual in cultivation are mentioned incidentally, perhaps, but in connection with others not so common, which may be not yet introduced. For instance, your article about the New Zealand woods mentions the Phormium Tenax. Now P. Tenax seems to do well there, consequently we may infer that many of the other plants mentioned might also succeed wherever P. Tenax does. W. F. P.

San Bernardino, Cal.

HINTS ON A POND LILY.

A gentleman in Grass Valley, who has always shown a warm friendship for the HORTICULTURIST, has a most beautiful lily pond in his garden. In a recent letter of genial advice on the pond subject, he said: "Build your pond of rock instead of brick, and back up the walls with rock pounded solid, or the weight of the water will warp and crack the sides, and cause it to leak. I have not succeeded in getting mine tight, and I am now at work putting tons of rock around it outside.

"I hit upon a very useful arrangement, which I would strongly recommend for large lily ponds. At each end of my pond I have a pillar of brick built from the bottom of the pond up to the surface of the soil, about 18 inches. Across the middle of the pond I have two walls of the same height, but one wall would be sufficient. When I wish to plant or remove any roots, I draw off the water, and lay a plank from the wall to one pillar. I can move it about and search any portion of the pond, but without this arrangement I should have to wade through eighteen inches of thin mud." F. M.

[This letter brings out some important points, the chief of which is, make your lily ponds water-tight. This, then, we would faithfully impress upon our readers. The culture of water lilies is so pleasant a pursuit that we hope to see it become universal.—ED. HORT.]

THE DELAYED CALIFORNIA BOTANY.—Mr. Editor: We have quite a number of interesting fall flowers in this section. They are chiefly of the Leguminosæ order, but I am unable to trace them to their genera and species, because I have been unable to obtain a more complete book than Volney Rattan's little work. What we wish to know, is: When can we have a new issue of the grand Botanical Survey of the State? And if such an issue is improbable, are there any other books on the classification of California flowers that will be of service to an amateur? Information on this subject will be gratefully received by many friends of nature. JOHN G. DUNN.

Linden, Nov. 21st, 1879.

[We do not yet know when the California Botany will be published, but hope to see the second volume, and a new edition of the first volume, appear soon. We shall keep our readers posted on this point.—EDITOR.]

BRIEFS OF CORRESPONDENCE.

A letter from Florida, from a noted lady botanist, promises us some notes on interesting plants of that region.

W. P., San Bernardino, writes that he may furnish us with some fruit notes next season. We shall be extremely glad to receive them.

John Rock has been moving his nur

series to a point some two miles northwest of his old location, and has gone to considerable expense in enlarging and heating his greenhouses.

Mr. Siler, the Utah "Cacti man," has sent us some small plants of Shephardia rotundifolia, a rare plant, with whitish leaves, of value for ornamental purposes. We acknowledge the kindness.

Hon. Horace Davis writes us, from the House of Representatives, that when our Horticultural Society is thoroughly organized he will try to help our library along, for which kindness all the members will be grateful.

A friend lately writes us that he procured a beautiful pink water lily root from Chipman Brothers, of Sandwich, Mass., at a cost of $10, and that it has proven eminently satisfactory, and is worth a hundred times the first cost.

Mrs. Childs writes, from Santa Barbara, that she has had great success with Lobelia cardinalis, and that many of the garden folk there are going to send East for plants. Why do they not try seeds? Half the fun of the business is in the seeds, according to our belief.

Mr. L. M. Holt, formerly Secretary of the Southern California Horticultural Society, and editor of their publication, writes stating that he expects to publish a work on semi-tropical fruit culture in Southern California. We shall be glad to see it, and he has our cordial wishes for its success.

John Saul, of Washington City, writes that few of our California Lilies do well East. Humboldtii is quite uncertain, though some do well in one particular spot on Mr. Saul's grounds. Then the HORTICULTURIST gets a compliment which we hope to more truly deserve.

H. S. W., Rockledge, Florida, writes that he is much pleased with the HORTICULTURIST, and wishes to have the orange growers of California and Florida compare notes. Mr. W. is a well known and interesting correspondent of several journals, and our readers will soon hear from him. We are also promised some botanical notes from one of the best lady botanists of Florida.

A letter from New Zealand, from our valued contributor Mrs. C. L. Bracey, gives yet further glimpses of that rare and lovely land, whose future is so bright. Everybody knows how Macaulay's New Zealander is to sit on a broken arch of London Bridge and contemplate the ruins of St. Paul. Well, now, we half expect that, or something like it may happen. The centre of civilization may be in New Zealand yet. It is an empire of possibilities. We lately spent some time over the Otago and Auckland papers, and they are full of interesting reading.

We were in some wise, we can not tell exactly how, caused to say in print last month, in one paragraph, that the Paulonia was hardy, and in another that the terminal bud was sometimes injured. This may require a line of explanation. We have seen the leader of the Paulonia Imperialis killed for an inch or so from the tip, but it will, we think, stand the winter in all our valleys without noticeable injury. As it gets older it is of course hardier.

Dr. Curl is trying experiments with new plants and fruits, for the benefit of the community. He wishes to procure seeds of the California Wild Plum

(Prunus subcordata), and the California Wild Cherry (P. demissa), also of the Humboldt Desert Plum (P. Andersonii), and of any other California wild fruit. He will return the favor by sending seeds of New Zealand plants and fruits. His full address is Dr. S. M. Curl, Manuka Bush Station, Central Rangitikei, Wellington, New Zealand.

VALUABLE GARDENING BOOKS.—A letter lately received from Mr. Robinson, the editor of the *London Garden*, mentions a number of useful books for the gardener and botanist, and, since several have asked us questions on that point, we take the liberty to quote a portion of his letter.

Mr. Robinson says: "As for the garden library you can not do anything better, I should say, than to buy the Treasury of Botany, Loudon's Arboretum, Michaux's Book of American Trees, and Barillon's Dictionary of Botany. There is no end of books on horticulture and botany, and you might spend a thousand pounds, and then not have all you need. Do not forget Leroy's Dictionary of Pomology."

FANTASTIC GARDEN DECORATIONS.—We protest in the name of correct taste against the employment of fantastic decorations for the garden and lawn. Rustic adornments in the way of pavillions, seats, vases, and arbors, when not too numerous, and if judiciously disposed about the grounds with no regard to their extent, are most appropriate; and yet the tendency here is to overdo, to multiply these structures, and cumber the lawn and garden with too many things of this kind. There is a worse taste however than the employment of rustic vases, chairs, etc., in outdoor embellishments, against which we most earnestly protest, and that is the use of those fantastically painted affairs which we hardly know how to name, with which people are wont to bestrew the lawn. For instance: at a neat town place of an acre or so in extent, which we visited not long ago, the owner had lined the sides of the main drive-way with bowlders, about the size of a six quart pail, said bowlders having been painted red, white and blue—the colors being "harmoniously arranged," as he said.—*American Cultivator.*

Editorial Department.

IMPORTANT NOTICE—CHANGE OF ADDRESS.—The editor of the HORTICULTURIST desires to state to his friends and to the public generally, that, having accepted a position on the editorial staff of the San Francisco *Daily Bulletin*, his address for horticultural manuscript and exchanges will be changed from Niles to 409 Washington Street, San Francisco, Cal. He wishes to embrace this opportunity to thank his friends of the press, and his numerous correspondents, for their constant favors and kindness, which have made the editorial paths most pleasant.

SPRING IS HERE.

It is the twenty-second of December, and in three days more, as the world knows, the blessed Christ-morn, with its hopes and memories, will be here. Three days ago there was a rain-cloud over the State from Bakersfield to Yreka, from sea to sierra, and the hearts of the brown-handed toilers, in field and in garden, grew glad with the promise of another golden year, an abundant harvest to be. To-day, the rain is past, and gone; the air is crystal pure, and healthily chill; we have to search long to find a cloud in the blueness of the sky; by the pulse of earth,

the winds of heaven, it is spring in defiance of the almanacs.

You busy merchant, in your narrow office; you tired teacher, in the clatter and worry of the schoolroom; you mechanic driving the lathe in cellars underground; you seamstress endlessly toiling close under the skylights; you printer, adding one to another the secret-telling types; you countless army of toilers, whom the great city hides in its sullen heart in the midst of heedless multitudes, so mingled that pleasure and pain, riches and poverty, virtue and dishonor, walk side by side unknown—do any of you forget the dewy grass, the fragrant blossoms, the berries in the woods, the rocky slopes of the blue hills which girt your childish horizons? Stop, and think a moment. This very day the sunlight fills many a forest aisle in the deep and emerald woods of Santa Cruz, Nevada, Trinity, Mendocino; this very day there are fern leaves, in multitudes not to be numbered, growing for mile after mile in benign, bewildering successions; this very day there are birds by the million, singing in melodious ways of rapture and delight. And, of all the grass blades, no two are quite alike; each one of all the blossoms has its own way, lesson, and sweetness; each fern-leaf crimples, each bird sings, each tree grows with its own charm, its own reason sufficient.

When we are tired let us think of whole forests cool and reverential; of leagues upon leagues of rocky coast with caves and shells, from firm beach, white foam, and gray breakers; of the coming thousands of acres of yellow buttercups, blue larkspurs, orange poppies, and lilac tritelias; of a whole State, from Arizona to Oregon, covered with green grass, even to-day. It is a most musical world whereof we need never despair. As this new year begins let us remember the three rules of the "Ten times one are ten" Club: To look forward, and not backward; to look upward, and not downward; to lend a helping hand.

SPRING BLOOMING FLOWERS.

There is in every garden which we have heard of a corner where flowers will blossom earlier than elsewhere. Search diligently for that place, my beloved garden friend, and when it is found, treasure and utilize it. Mayhap it is in an angle of the fence, or near the house, or close to a great rock, or south of a hedge, or mass of shrubbery. It is there that the first blue forget-me-not is found, there that the first pink Oxalis unfolds, there the earliest Crocuses, Anemones, and Jonquils bloom. A single day is worth so much in the calendar of the true flower-lover. Why the first new pansy bud, purple and leaf-hid, which we find in spring-time, is worth a handful afterwards. The charm of the first of anything has never been fairly told.

Now, if anyone will mark out a spot for spring gardening, it will form a sort of nucleus about which many early-flowering shrubs and annuals will gather. If a spring ribbon bed is to be tried, they must of course be in bloom at about the same time, but small patches of spring-time color scattered through the shrubbery are admirable, and need not be expensive. The following are good spring bloomers: Silene pendula, pink; Limnanthes Douglasi (a California annual), yellow; Myosotis silvatica, blue; Saxifraga granulata, white. In addition to them, we can recommend pansies, daisies, polyanthuses, Arabis alpina, single and double blue violets, candytuft for bouquets, and also tulips, hyacinths, cro-

cuses, anemones, scillas, and other early bulbs. Some one nudges our memory and suggests nemophilas. Really, we have spoken so many times of that lovely California flower that it seems as if each of our readers must know all about it. But the fact is that, not long ago, we found it hard to procure nemophila seed, though inquiring at several seed-stores in this city. Our lovely gillias and pentstemons are often equally unknown. Our gardening people in California do not plant half enough of the native species of bulbs, annuals, and perennials. It is a sad state of affairs, and some one should begin to preach a reform.

NATIONAL SOCIETIES.

We presume that all of our readers have heard of the movement to establish a National Agricultural Society in the United States. There is no reason why such an enterprise should not succeed, and we believe it can not but result in much good. It will, if rightly managed, bring different sections more closely together; it will be able to express the feelings and beliefs of the farming classes; it will suggest, improve, develop the state of agriculture in our midst.

But, if it were possible, we should have another National Society—one of horticulture. No matter how successful the State societies become, there should be one society of national extent and importance; one society whose exhibitions and deliberations should be of universal interest. Here, where the will of the people is royal, we can have a Royal Horticultural Society of our own, in our own way. The American Pomological Society is a type of patient, enthusiastic work. By and by, when we have our district shows of flowers, plants, and vegetables; when school children and villagers compete; when America is all flower-land, there will be, let us hope, a National Horticultural Society, to perpetuate itself forever, gathering strength year by year, and helping to teach men how to live brighter and sweeter lives.

THE FIELD FOR GARDENERS.

A letter in this number from our esteemed correspondent, Leonard Coates, is in many ways suggestive. He asks whether there is room for more gardeners in California? It is pleasant to learn of an increasing interest in our State, and we most heartily indorse all that can be said regarding the necessity of absolute truthfulness, on the part of the public press, towards strangers who ask questions about our soil, climate, and resources. To ignorantly or willfully exaggerate on the subjects is to commit a crime. California wants more citizens—but they must be happy, successful, ambitious, and fully satisfied with their surroundings.

The error which many of the local papers commit is to pick up every example of a marvelous yield, and blazon it as a usual thing, as, in fact, a "dead certainty." Some San Francisco papers, also, have at times done altogether too much of that sort of thing. A publication called the *Resources of California* has never uttered anything but praise of any section of our State. And there are others of the same nature. This is not, however, peculiar to California. The same thing occurs in every undeveloped region, and wherever there is room, and a desire for more people.

Beyond any shadow of doubt there are opportunities here, such as seldom occur, for the investment of a small capital. There is enough unskilled labor, though some is of a very poor

character. We do not so much need laborers as we need men who own a garden spot, a vineyard on the hill-side, a few well-cultivated acres of orchard. There is room for thousands of such, and also for the tradesmen and artisans which they would support. The northern coast counties, and the sierra foothills, offer the best openings for individuals. The most successful colonies have been in the southern counties.

It must be said, with reference to colonies, that they are of two kinds—speculative and *bona fide*. Some of the California colonies have not been successful, because the land and water for irrigation cost too much to begin with, or were badly managed. Others have prospered wonderfully, and give us a glimpse of what will eventually be done in the way of healthy, successful communities. The best plan for a colony is where a number of families put their means together and buy directly from the original owner, dividing the land up among themselves afterwards, and going upon it immediately. There is an abundance of rich land to be purchased in the central counties of the State at from thirty to sixty dollars per acre—land which is fit for colony purposes, and would amply repay the labor put upon it.

If the question is asked whether we have room in this State for more gardeners, it needs a careful answer. We ought to have a great many more educated and practical gardeners, florists, and horticulturists, to assist in the proper development of this coast. But we have not, as yet, a sufficient number of really choice and well kept private grounds to employ many more gardeners than are now on the coast. Matters are growing better each year, but, at present, the opening for gardeners who must work for wages is not large. Gardeners who have enough means to look about them somewhat, and who will purchase and improve a few acres, growing some plants for the neighborhood, and turning their attention to vines and fruits, will never regret that they came to California.

SPRING FLOWERING SHRUBS.

The early blooming shrubs are often the most attractive features in a garden. Plant them with a lavish hand. They need little care, and as we have often said, shrubs of all kinds are eminently adapted to our climate. The Golden Jasmine (J. nudiflorum) blooms early, and is worth having. It may be trained to a wall, or a pillar, or if severely cut back each year, and staked, may stand on the lawn. The Catalonian Jasmine, which has large white flowers, is even an earlier bloomer than is the yellow species. Scotch Furze (Ulex Europæus), is, we are informed, used with great effect in many of the gardens of Europe. It grows on the rockiest and steepest of hill-sides, and hence might be used as a background to mountain gardens. Forsythia voridissima, and F. suspensa have handsome yellow flowers. The red-flowering Currant (Ribes sanguineum), with its bright rosy blossoms in long, drooping racemes, is worthy of a place in every garden. The Magnolias are, some of them, of great beauty. M. Soulangeana is one of the best. M. Halleana is equally valuable. Both bloom on leafless stems. The flowers are very large and showy. Cydonia Japonica is a good shrub for low hedges. It is of the easiest cultivation. Both the white and the crimson are worth having. The Laurestinus is well enough known already, as it appears in so many of our gardens. Its profuse flowering qualities commend it. Prunus triloba, and

P. sinensis, are covered with lovely little flowers in perfect wreaths. Berberis Darwini has flowers of a rich orange color, and leaves of deep green. Lilacs, Deutzias, and Spireas, should find a place in every well-ordered garden.

FORM FRUIT CLUBS.

The State Horticultural Society needs the help of others besides the botanist. There is another side to its work. It tries to study the needs of the orchardist in California. There are committees devoted to that subject, and it is expected that much will, in the course of time, be done as regards the nomenclature of varieties of our orchard fruits, the insect and diseases to which trees are liable, culture and treatment of orchards, and in fact, all which pertains to successful pomological work. Now, it is eminently desirable that the fruit growers of each and every valley and ravine and mountain side of our State should report to us at times, and should in fact organize a Fruit, or Pomological, or Orchardists' Club for study and mutual improvement in their chosen business. Two friendly neighbors could do it. Half a dozen of one mind would make the biggest kind of success. Then they might report to the Pomological section of the State Horticultural Society, and so, by united efforts, a vast fund of knowledge would be obtained.

TO OUR CORRESPONDENTS.

Pleasant letters keep pouring in. We are oftentimes pelted with postals in pencil; likewise with ink ones. Please keep it up. But, as we become busier and busier (and mind you we do not mean to grumble), it is more and more hard to find time to write replies. It becomes a necessity that our friends in mountain valleys and on the wide San Joaquin and Sacramento plains, and by lonely and lovely rivers, must look to the pages of this monthly for the answers to what they ask.

Many times during the past year we have answered personal queries by letter—dozens of them. We still expect to do that when no other way stands open. But we desire, more and more, to have our friends find *this* the medium, and to have them gather in monthly circles about our horticultural campfires. If you want to ask about anything, write; if you have anything to tell, write; and please *do* write on only one side of the paper. Not many hours ago we received an article. It was delightfully written. The author knew where to begin, and very nearly where to stop. But it was written on both sides of the paper. We either had to copy every other page, or to send it to the printer as it was. A year ago, in our days of innocence and idleness, we would have proceeded to do the first. As it was, we did the latter, and the printers (some of them), we have since been reliably informed, made remarks which were not saintly, but severe. Printers are but human.

We once knew a young man who began to write for the newspapers. At first he did it with much pride and style. He bought expensive paper; he was continually troubled about pens; his ink was the best to be found; the shade of his envelopes was an agony; he owned a copy of the "Authors' Guide." But still the publishers did not want his manuscripts. He thought this was very curious, because there was another young man who wrote on strips of wrapping paper, with an old stub of a lead pencil, and the publishers were willing, and the printers rejoiced at his copy.

A man who writes a valuable letter

must have something to say. If he becomes interested in his subject, the story will probably be well told. He must be willing to take some trouble to re-write and re-arrange his matter. People who have respect for the printers will (*a*) leave a margin of half an inch on the left hand of every sheet; (*b*) will paragraph distinctly, beginning the first line of a paragraph in the middle of the page; (*c*) will separate the words, and not run a single word across a line, with a flourish at the end; (*d*) will never write on both sides of the paper unless in a strictly private letter. Thus runs the literary gospel, whereby, if you take kindly heed, you are on the high road to the kingdom of good authorship.

FORM BOTANICAL CLUBS.

Now that the State Horticultural Society is fairly and hopefully organized, it is quite in order for ladies and gentlemen in any part of the State, or indeed of the whole Pacific Coast, to form local societies for the study of plants and for mutual improvement in botany, and to put themselves into communication with the Secretary of the State Horticultural Society's Botanical Section, so as to report the results of their work. There are a great many pleasant discoveries to be made in this way, if a few persons only help each other. There is hardly a village in the State where such a botanical club might not be formed. There ought to be a weekly meeting for study, and a monthly meeting for business, and the members ought to make Saturday excursions in search of plants. They would be certain to make a host of interesting discoveries in the course of their cheerful rambles. Now where are the ladies who will organize botanical clubs? Monterey, Santa Cruz, Grass Valley, Watsonville, Santa Barbara, Riverside, and dozens of other places ought to have at least one apiece.

Ferns in a California Conservatory.—The illustration which we present to our readers this month is, we think, the best photograph which the Horticulturist has ever had taken. It represents a view from the interior of Mr. A. K. P. Harmon's largest conservatory, at Oakland, Alameda County, and was taken expressly for us. The large tree ferns from New Zealand, and the Adiantums, Davallias, and other interesting species are well shown. The leaves in the background at the extreme right hand are those of the ginger plant. Caladiums, Begonias, trailing vines, Banana stems, and the central aquarium which gleams from under the mist of delicate fern-tracery, all unite to make up a most enjoyable whole. It makes one wish that he could live in such a lovely land of sun and shade; it makes the boyish dreams of tropic lands and coral isles, most real and glorious. Really, if one did but know it, the ferns in this conservatory are much happier than they would be in their native woods. At least we more than half think so.

December Meeting of the State Horticultural Society.—Mr. Hatch, of Solano County, exhibited five seedling almonds. Two of them were very thin-shelled. The others were somewhat harder than the ordinary Languedoc. All were of medium size, and report as unusually early. Some large specimens of Japanese Persimmon were exhibited by Joseph Sexton, of Santa Barbara; also some fine Japanese Chestnuts, which were larger than the Italian species. Mr. Blowers was on hand with his Sultana and Muscatel raisins, and also with specimens of Emperor grapes,

which had been picked in October, but were in perfect condition, and will keep for three months longer. The value of this beautiful grape for market purposes is evident. There were ten new members duly elected, and four persons were nominated. The subject for discussion at the next meeting is on Transplanting and Pruning of Trees. Charles H. Shinn is appointed to lead in the discussion. R. A. Blowers is to discuss the subject of pruning grapevines.

Editorial Notes.

The new Lilium Japonicum is a charming lily, and deserves a wide dissemination. It was described in Mr. Jarmain's article last year, so we shall not repeat, but we speak of it, as bulbs have just been received by some of the nurserymen on this coast. They can not be sold for less than $1 50, as it is a rare and expensive lily; and we think that $2 will be charged for extra sized bulbs. But they are well worth it.

Japanese Chestnut Trees.—There is a very choice variety of Chestnut which grows in Japan, and has not heretofore been known on this coast. We first received a few of the nuts last year, and this year received the trees. The nut is larger and of better flavor than the well known Italian Chestnut. The San Francisco *Bulletin* of this city is now distribuing seeds to its subscribers, and among others ordered this Chestnut. The nuts are the largest ever seen, some of them weighing 1½ to 1¾ oz. The trees, which may be seen at Shinn's nurseries near Niles, are handsome, sturdy, and healthy, and the species promises to be a valuable introduction to this coast.

Imports of Sugar and Molasses.—During the year 1878, the United States paid $77,537,569 for imported sugar and molasses. It is certainly more desirable to keep this large sum at home, and it would seem entirely possible to do so. We have already beet sugar factories in operation, but there is room for more, and much land and capital could doubtless find profitable use in raising sorghum and making sugar from it. Some of the newer varieties of this cane are said to yield as high as 10 per cent. of crystallizable sugar, which is about equal to Louisiana cane.

Jujube Jelly.—We see elderberries recommended for jelly making, but the *Gardener's Monthly* informs us that no other fruit is equal to the jujube for that purpose. As the jujube is a tree of easy culture, we should think it worth planting for that purpose alone.

Perfumes.—The *Gardener's Monthly* gives some statistics about perfumery, from which we take a part. Europe and British India consume yearly 150,000 gallons of handkerchief perfume, and the English revenue from imported perfumes is $240,000 each year. One perfume distillery at Cannes, France, used yearly about 100,000 pounds of acacia flowers, 140,000 pounds of rare flower leaves, 32,000 pounds of jasmine blossoms, and 20,000 pounds of tuberose blossoms, together with an immense quantity of other material. The value of perfumes to countries adapted to their production may be gathered from the following estimate of their growth and value per acre. An acre of jasmine plants, 40,000 in number, will produce 5,000 pounds of flowers, worth $1,250; an acre of roses, 10,000 plants, 2,000 pounds of flowers, worth $375; 300 orange trees, growing on an acre at ten years of age, 2,000 pounds of flowers, value, $250; an acre of violets, 1,600 pounds of flowers, $800; an acre of cassia trees (300 trees) at three years of age, 900 pounds, $450; an acre of geranium plants will yield 2,000 lbs. distilled attar worth $4,000; an acre of laveuder, 3,500 pounds of flowers for distillation, $1,500.

Rare Water Lilies.—Mr. Stratton, of Petaluma, showed us, during a recent visit to that town, some plants of choice water lilies. We noticed N. Devoniensis, N. cerulia, and others. They seemed in healthy condition, though too small to bloom for some time. Here, Mr. Stratton says, the well known white water lily (N. odorata) needs to be bloomed in tubs set on the surface of the ground, as the summer nights are cool, and it requires more warmth than would be obtained if sunk beneath the surface.

Sexton's Nurseries.—Two miles west of the town of Petaluma, in the midst of a busy farming community, we found Mr. Sexton busy with his greenhouses and nursery plans. The region round about is one of gentle undulations, rolling hills, and rounded peaks, beneath whose summits orchards nestle, and vineyards cluster, still (Nov. 22d) with the last grapes ungathered. Mr. Sexton bought most of an importation of Japan plants last year, and is well supplied with Persimmons and Camellias. His trees show good growth, and careful attention. He informed us that he is thinking of trying the Asbestine system of underground piping, not for irrigation, but for drainage, some of his land being too wet in ordinary seasons.

A Novelty in Roses.—We are informed that buds of the new striped tea rose, "American Banner," were worn for the first time in New York, by the ladies waiting on the tables at the Fair of the Seventh Regiment, on the evening of Wednesday,

December 3d. This rose from its novelty and scarcity is likely to be in great demand this winter; but as it can only be supplied in small quantities, it will cost more than its weight in gold.

Aquarium Plants.—The interest in aquariums ought to increase through the winter months. We can recommend the following: Trapa natans, an annual from the south of Europe, with floating leaves, flowers and nuts; Ranunculus rosela, from Florida, with fan-shaped, tinted leaves, and trumpet-shaped white flowers; Limnocharis Humboldtii, a small lily from Buenos Ayres, with beautiful yellow flowers; Hydrocharis cordifolia, a native of the United States, heart-shaped leaves, flowers white; Saggitaria lancifolia, from South America, a variety of the common arrow-head, bearing a spike of begonia-like flowers. All these plants, together with the Nymphea flora, or Florida pond lily, and many others, will succeed in outdoor tanks and water-basins in our climate.

The Brisbane Botanic Garden.—During the past year much has been done in these gardens. The rainfall of last winter was excessive, and a hurricane passing over Brisbane, last May, uprooted some of the finest trees in the gardens. An Acacia Lebbeck sixty feet high, and Araucarias of fifty feet in height were destroyed. This has been the only casualty of note during the season. Many improvements have been made in the aquaria, the conservatories, and the grounds. Seeds of native trees are gathered and distributed to all parts of the world. The chief genera thus disseminated are Eucalypti, Grevilleas, Cedrelas, Aruacarias, Casuarinas, and Drammaras. A collection of native woods, numbering about two hundred, has been made for exhibition, together with some account of their character and usefulness.

Seventy-eight varieties of sugar cane have been tested. This collection has proved of great value, and cuttings and seeds have been sent to the United States, the West Indies, Hawaii, and other places. The sugar industry is developing in the province of Queensland. In 1878, 16,584 acres were devoted to sugar cane in that province, and 12,356 tons of sugar were produced.

Rice, received from British Burmah and Madras, was judiciously distributed, and the result has been a large yield. Farmers are exhibiting considerable interest in the subject, as it is expected that rice will become a profitable crop.

With respect to coffee culture the Government has offered peculiar inducements, there being many acres which are thought to be eminently suited to that product. Seed is being widely distributed by the authorities of the Botanic Gardens.

Reports from Ceylon state that the leaf disease threatens to ruin the plantations there, and greater efforts will be made to start plantations in Queensland. The points recommended, on the Morseby ranges, are also suitable for cocoa, nutmeg, cinnamon, clove, and species of cinchona. The low ground of the vicinity is adapted to gutta percha, ipecacuanha, black pepper, etc.

In the matter of grasses the following new ones are recommended: Eleusine eoracana, an annual grass, rapid grower, and large producer; Arundinaria falcata, an Indian perennial; Poa fertilis, perennial; and Euchlæna luxurians, of which so much has been said in agricultnral journals. The stalks are reported as being too hard and fibrous.

During the year the Colonial Botanist and Director, Mr. Walter Hill, visited Fraser Island, and made reservations of government timber, taking proper steps to prevent waste, and wanton destruction. The whole history of the Botanic Garden shows able and practical work, and we ought to have one like it at the University.

Propagation of Adiantum Cuneatum.—This fine variety of fern was the subject of discussion at the recent meeting of the San Mateo County Horticultural Society, and Mr. Burr, of Menlo Park, read a paper on its treatment from which we condense the following: This Adiantum may be propagated by spores, and also by the division of the stools. If by spores, procure a well ripened frond, and keep until perfectly dry. Many ways of sowing are recommended, but the most successful here was by using bits of sandstone about the size of a marble; fill a seed pan two-thirds full, and fill the spaces between the bits of sandstone with peat, then sow the spores, and cover it with moss. Water, place in an orchid house, and cover with a piece of glass. If the plant is to be propagated by division of the stools, January is the best time. On repotting be careful not to put them in too large pots, as the crowns will not push until the roots touch the sides of the pot. Plants four feet through have been grown in the following compost: peat, two-thirds; loam, sand, and well rotted manure, one-third; with a sprinkling of sandstone, all mixed together. But in this State peat is so difficult to obtain that, as Mr. Burr states, the compost may be leaf-mould, two-thirds, in its place. An ordinary greenhouse temperature is sufficient, unless a winter growth is desired, and then some artificial heat will be needed.

The Chinese Sumac.—The Chinese Sumac (Rhus Osbecki), is larger and in every way more conspicuous than any other form of the Rhus family. The leaves are broad, massive, and distinguished by a peculiar extension of the leaf along the midrib. Its fall coloring in the Eastern States, so Samuel Parsons says in the *New Yorker*, is brilliant in the extreme, being far more conspicuous than the American species. The flower is also attractive. This shrub is of very recent introduction, and has not yet been seen on this Coast.

Australian Native Grasses.—In 1875 the Royal Agricultural Society of Queensland offered a valu-

able prize for an essay on native grasses. At that time it was found that the Bromus arenarius or native oat grass had nearly disappeared. Since then varied experiments have been carried on, and the Queenslanders have decided that they possess some native grasses of rare merit. Besides the Bromus, other prominent varieties are, Festuca Billardieri, a favorite with stock-owners; Helopus annulatus, which is valuable for both summer and winter growth; and Microlæna stipoides, a grass of rapid growth, and a prolific seed yielder. All of these grasses named are being liberally distributed in both the farming and the pastoral districts.

TWO LAWN TREES.—We have been much pleased with the Cladrastis tinctoria, or Yellow-wood, formerly known as the Virgilia lutea, a lovely tree, of graceful growth, clean, clear-colored bark, drooping leaves, and handsome flowers. It is to be hoped that our nurserymen will have so many demands for it this winter that they will always hereafter keep a stock of this neat tree. Then, also, there is the Salisburia adiantum, or Maiden-hair tree (Ginko). We like this tree better every year. When small it is not impressive, but as it grows the curious flake-like leaves develop a fuller beauty. It is a tree of permanent value, and one which becomes a conspicuous object on the lawn before many years. *Scribner's Monthly* recently gave a fine illustration of this tree in an article on lawns and shrubbery.

DOLICHOS JAPONICUS.—This is a Japan climber of recent introduction, and it has won the admiration of Samuel Parsons, Jr., who writes concerning it in the *Country Gentleman*. The leaves are eight inches in diameter, of a rich green color, and rounded in a curious three-lobed manner. The flowers are said to be in long racemes, with white and purple colors intermixed. The wonderful quality possessed by this climber is the vigor of its growth. This gives it great value for covering piles of rock, arbors, or unsightly walls.

DRYING SEA-MOSSES.—The sea-mosses of California are beautiful, and we are glad to hear of people who collect them. But it is wonderful how many ways—different ways—there are for doing the same thing. You may ask a dozen people, one after another, to dry sea-mosses, and though you explain the whole operation, most of them will wreck the beauty of each spray. It takes somewhat of an artist-spirit to make them look fresh, and airy, and natural. Some one lately asked us how it is done. Rinse the bits of sea-weed in clear fresh water. Then slip a piece of card under each piece, float it off in another pan, and spread it out naturally. Place a piece of bristol board underneath, and arrange each tiny fibre separately with some pointed instrument. Raise the board from the water and place it sloping to drain off the water, press it lightly with soft linen, and lay it in tissue paper, changed frequently till it is entirely dry. No gum is needed to fasten the moss on the paper, for it clings fast as it dries.

THREE BLUE SALVIAS.—Our readers are doubtless familiar with the Scarlet Salvias, used for bedding and for greenhouse decoration, but the choicer blue-flowered varieties are not so often seen. The Salvia patens has large flowers of a deep azure blue. It is of a bushy growth, and always attracts attention. It will remain outdoors without injury in sheltered, frostless situations. Salvia cacafolia, says the *Botanical Index*, is of a creeping growth, blooms later than patens, and is easier to propagate. Salvia splendens Hoveyi is a sport from S. splendens. It is a rank grower, with dark metallic luster. The flowers are not true blue, but have a dark purple shade.

BUDDING ORANGE TREES.—A gentleman in Florida has been budding orange trees with ease and success by trimming his buds during the heat of the day, and dropping them into a cup of clear water, inserting them when it is cooler. He ties his buds with prepared cloth, taking the best of bleached muslin, and covering it with a composition of equal parts of rosin and wax for dry weather, and tar and wax for wet weather.

A NEW SCALE INSECT.—The *Florida Agriculturist* states that a new and destructive scale insect has been found in Florida. Specimens were forwarded to Prof. Riley, who gives the following description: "The scale is perfectly circular, of a dark brown color, with a narrow band of a paler color surrounding the outer edge. On the top is a small round depression, with a yellowish cap in the centre. Diameter of scale, .02 to .06 of an inch. Remedy, decoction of tobacco leaves and whale oil soap, with a little potash added. Syringe this over the leaves." Prof. Comstock states that it probably belongs in the Coccid genus Ceroplastes. No less than 587 scales were found on one leaf. We wish to inquire if any one has seen this species of scale in California?

THE SOJA HISPIDA BEAN.—This bean, a native of Japan, was taken to Europe in 1873, and cultivated in Vienna with great success. It is recommended as a general field crop, and has become popular in Austria and in parts of Northern Germany. They yield a large crop and are rich in nutritive food. Analysis has shown that they possess more than double the value of any kind of peas, common beans, or lentils. The straw is valuable for cattle, and the crop is of the easiest culture. We also see that, although at first advocated merely for cattle food, the soja bean is being used on the table. We should like to see it introduced direct from Japan, as the prospects are that it would prove an acquisition.

GRAPES OF SANTA CRUZ.—Deep in the Santa Cruz Mountains, not many weeks ago, two people on

horseback found a vineyard on a brown hill-side, and out of sight, all but the chimney, was the owner's cabin. We felt amazingly honest, for five cents would buy all we could carry, so we rapped at the cabin door. A wide fireplace, and a Dutch oven heating in the coals, occupied one side of the room; the straightest of old Kentucky rifles hung on a pair of antlers; there were rawhide-bottomed chairs, and a most ancient clock. It was a glimpse of the pioneer life, and of the days which were. And concerning the grapes? We spent five cents in silver, and we filled our hats, and had a bunch left for each hand, which we bore off in triumph.

CORDYLINES IN THE GARDEN.—We notice that an attempt was recently made to acclimatize some of the best colored-leaved Cordylines, in the Melbourne Botanic Garden. In order to do this a dozen kinds were planted in tho fern-garden, but only three were adapted to the conditions; these were Cordyline Knoxii, C. Hendersonii, and C. Benthamiana. In the Islands of the New Hebrides these colored Cordylines are found growing wild in the open forests, jungles, and deep ravines, often reaching a height of ten or twelve feet, and lifting their clustered heads of red, yellow, purple, and striped foliage in gorgeous masses of color against the foliage of tropical palms, cycads, and bananas.

HARDY CINCHONAS.—The two hardiest species of Cinchona appear to be the Cinchona officinalis, and the Cinchona calisaya. The former is cultivated successfully in India, Ceylon, and Java, and has been grown in the Melbourne Botanic Gardens. The latter is indigenous to both Peru and Bolivia, and grows at an altitude of 6,000 feet above the sea. It is also cultivated in India, Jamaica, and Mexico. The range of the genus Cinchona, order Rubracæ, is between latitude 10 deg. north, and 22 deg. south, on the eastern slope of the Cordilleras, but it is never found on the western slopes, or Coast Cordilleras.

ASIATIC VINES AND PHYLLOXERA.—In one of the last meetings of the French National Society of Agriculture, M. Lavallée advised grafting European upon Asiatic vines, and recommended these species: Vitis biternata, amurensis, flexuosa, heterophylla, filicifolia, and some species of Cissus and of Ampelopsis, which are not all suitable for these experiments. He only makes the suggestion, but one who sees the vigor of these species in M. Lavallée's collection, hopes that he may be right.

PHYLLOXERA AT PANAMA.—It seems from a recent communication of M. Planchon to the French Academy of Sciences that the redoubtable insect exists in the Isthmus of Panama, where L. Collot has found it under the leaves of a wild vine. There is room for investigation in the existence of the phylloxera in localities so for apart, and perhaps this discovery will throw some light on the vexed question of the insect's origin.

GARDEN "LEAFLETS."—Some one has begun a new department in the *Garden*. It is called "Leaflets," and consists of short notes on a great variety of topics. Here is what is said about our work. "One of my pleasures is to take up the CALIFORNIA HORTICULTURIST and see what it is doing in that far off, sunny land of mountains, noble forests, and warm plains; and which more, perhaps than any other country, has been rapidly turned into a garden land."

Another "Leaflet" is this: "A great divergence of taste is exhibited on the subject of button-hole bouquets. Some noble and enthusiastic patrons of horticulture wear these every day in the year, and have them sent after them by post wherever they go. They are of the commonly approved pattern, and usually consist of one large flower of overpowering odor, flattened out to its greatest diameter, backed with fern, and attached to an oak-leaf pelargonium nearly as large as the lappel of a dress coat. Considerable engineering skill is exhibited in the construction of these ornaments of the person, wire is not spared, and the weight of that alone would handicap the wearer in a race. I have seen a lady prepare a pretty contrast by plucking a single rose-bud off the bush and placing it in a three-lobed rose leaf."

This, also, is a delightfully suggestive "leaflet." "A lady friend ornaments her very bewitching caps with carefully dried everlasting flowers of pink, white, and yellow Rhodanthes and Helichrysums. They are gathered when fully blown, on a fine day, and are carefully dried in a warm room. They are, of course, far more delicate and pretty than any artificial flowers."

Pomological Notes.

PEARS IN MARKET.—The Winter Nelis, Glout Morceau, Beurre Gris D'Hiver Noveau, Dutchess D' Angouleme, and Easter Beurre have been the predominent varieties, though Vicar of Winkfield, and some others, appear occasionally. It is nearly the close of the Nelis season, and this most delicious pear, which is the favorite of our shippers, will soon be only a memory. Quantities of the large, coarse, but brilliantly-colored Pound Pear are to be seen on every street corner. They are not good to eat, but they have uses as a cooking fruit, and are worth growing on that account. Extra large specimens find sale, sometimes, to restaurant keepers and saloon men who have found out that they keep for months, and are therefore advisable investments for show-window purposes.

SOME CHOICE VARIETIES OF FIGS.—We have often been asked questions about the varieties of figs. Some of the best are the following: Green Smyrna,

which is the common summer fig of Palestine, and though coarse and dry, is valuable on account of its extreme earliness; Green Ischia, which has a light green skin, and extremely sweet bright red flesh; large White Genoa, color of skin yellowish-white, and flesh of golden yellow when ripe, is one of the best sorts; Black Genoa is large, oval shape, must ripen well on the tree, bears transportation better than almost any other variety; Black Brunswick is of good quality, but often a shy bearer. In New Orleans there are two valuable varieties grown, the Sumatra, a large and sweet fig, and the Celeste, called the best in Louisiana. Other varieties of worth are the Brown Turkey, the Black Ischia, and Mission, or Black Californian fig. Of these the Marseilles is too small to be of much use for market, although a very sweet and rich fig for family use.

GLORIA MUNDI APPLES FOR BAKING.—Not long ago we had a postal, it will be remembered, which stated that the Gloria Mundi Apple was of great value as a cooking apple. We lately saw the experiment tried, and hereby offer our allegiance to the doctrine. It is a good baking apple; one of the very best. So, let no one, henceforth, sneer at the Gloria Mundi, even if it is big and clumsy, and apt to fall too easily.

USES OF THE JUJUBE TREE.—At the last meeting of the State Horticultural Society Mr. Rixford exhibited a quantity of Jujube plums, and also a branch showing the way in which they grow. The tree, or rather shrub, is a handsome but thorny affair, of decided hedge-making proclivities. Its culture is remarkably easy, and it will grow with ease at any point in the State where frosts are not too severe. It is a success at Niles, in Sonoma, and in the southern counties. It seems to us that every farmer would like to have one or two on his place, and that a Jujube tree would look well on any lawn. The fruit is pleasant to the taste, and would evidently be cherished with rapturous delight by the children, though no one claims that it can ever become a market fruit. It is handsome when on the tree, half hid in the trailing branches. If there is, in the future, any use for the fruit as a paste or jelly, or some similar product, we shall hear of it in due time, though we can not predict any great product of California Jujube Paste for many years to come.

THE WEALTHY APPLE.—A new apple of interest for the colder mountain regions of our State, is the "Wealthy," which originated in Minnesota. It is of perfect form, high color, and good flavor. In size it averages well with the Baldwin, and the tree is a great bearer. It must be classed as an early winter apple. The Canada Baldwin, another new apple, is a late keeper, and thrives on heavy soil.

WILDER'S EXPERIMENTAL ORCHARD.—The celebrated pear orchard of Marshall P. Wilder is called the finest experimental orchard in the United States. It covers twelve acres, and once contained a thousand varieties, which number has been reduced to between eight and nine hundred.

THE NEW BANANA DISEASE.—We have lately printed several notes in relation to the cultivation of the banana in this State. It is to be hoped that nothing will introduce the new banana disease which is destroying acres of that valuable fruit in the province of Queensland, Australia. It begins with young plants. Small, thread-like worms, invisible to the naked eye, attack the roots, which swell and decay. Along the banks of the rivers, miles of plants have disappeared, and, as yet, no remedy has been found. New plants were procured from other parts of the world, and put on new land, but they also were attacked.

THE KUMQUAT.—The Kumquat is a small species of the orange, a native of China and Japan, and is much cultivated in those countries. We notice, also, from our Australian exchanges, that it has been introduced into the province of Queensland, and is regarded with much favor. It will endure more frost than any other of the Citrus family, and is expected to prove of value in many parts of Europe and the United States. The plant will grow six feet high, but is usually not allowed to grow higher than a gooseberry bush. The fruit is oval, and about as large as a gooseberry. In quality it is excellent, and the Chinese preserve it in sugar.

THE CITRON IN CALIFORNIA.—Over a large portion of our State the citron is a success, and can be grown in any desired quantity. Some day it will be planted in large orchards, and the fruit will be preserved for market. This is a subject well worth the study and attention of our readers. There are some citron trees growing and thriving in Alameda County, at Haywards, and we have seen them in several other parts of the State, though there are, as yet, no extensive orchards.

NEW APPLE.—The French have a new apple, the "Madame Granger," which is said to be very large and ribbed like some tomatoes.

New & Desirable Plants.

[We shall glean from our exchanges and correspondence, notes on plants either new, or of promise in our climate. Our nurserymen are invited to send notes on any interesting plants received.]

BULBOPHYLLUM BECCARI.—As regards foliage, this is the most remarkable orchid that has been introduced for many years, the leaves being more like Zulu shields than the foliage to which we are accustomed in an orchid. They are frequently eighteen inches long, and one foot wide, stiff and firm in substance. Mr. Bull has quite a quantity of this orchid,

and it will be interesting to see what kind of a flower it produces.—*Garden.*

CHAMÆDOREA GLAUCIFOLIA.—This is a poem of grace if such a thing can be said of any plant. I have noted of late years many graceful palms, some of which are happily becoming more common in our houses, but I think for bewitching elegance of form this is second to no other.—*Ibid.*

SARSACENIA FLAVA ORNATA.—This is a distinct and handsome Pitcher Plant, remarkable for its bold and strongly pronounced venation. The upper part of the pitcher is of a dark purplish-red, which is continued over the lid. It is a very handsome form, the contrast between its clear green and the bold red venation being striking and very effective. —*Ibid.*

Reviews and Exchanges.

[All books on subjects in any way connected with horticulture will be reviewed in this department. Publishers are requested to state the price of each book sent.]

We are happy to learn that Meehan's "Native Flowers and Ferns of the United States" has not been suspended for want of patronage, but that the patronage has been such as to justify its continuance till all the leading flowers of the United States have been illustrated.

GEOGRAPHIC TRAVELS IN CENTRAL AUSTRALIA FROM 1872 TO 1874. By Ernest Giles.

This is a volume of remarkable travels, which reveal the vast resources and stupendous natural features of the Island-continent, Australia. Baron Von Mueller, to whose kindness we are indebted for the the present volume, was the originator, and main support of the enterprise, which had for its object the exploration of the *terra incognita* of Central Australia. It is a region of deserts, alternated with spots of rare fertility; a region of hills of red gravel, covered with spinifex, wide, desolate plains, without food or water, pools in the rock, lakes of salt, lava beds, lonely basaltic peaks. Mr. Giles' style is the model of terse and plain simplicity. Cast in the form of a journal, it is the tale of the extraordinary journey of a skillful, courageous explorer. There were dangers enough, by fire and rude natives, by hunger and thirst, but the little party clung to their course, they lived on horse flesh, and were glad enough to get even that. One of them was lost in the desert, and never was found. At the same time Mr. Giles himself staggered on for five days without food, and with only a few drops of water, under the burning Australian sun, and over a desolate, forsaken region to the main camp. Giles has connected his name inseparably with the explorers of Australia. A list of the plants procured by Mr. Giles on his expedition is appended to the volume.

REPORT OF THE DEPARTMENT OF AGRICULTURE FOR 1878.

Many of our agricultural journals have at times decried the work and the methods of our Agricultural Commissioner, and it is quite possible that some of their criticisms were well founded. We are ourselves as completely opposed to free seed distributions of common seed-store seeds as the best enemy of that department could desire. But that the past year has been one of hard work, and of interesting results in the agricultural department, no man who reads the report can, we think, successfully deny. Prof. Hilgard of our State University contributes a valuable and exhaustive report on "The Agriculture and Soils of California." This article is the best statement of our conditions of soil and climate which we have yet seen, and well deserves a wide notice. It was, we presume, written last year. As most of our readers doubtless understand, the report for any given year is issued during the following one. A lengthy statistical article on the Dried Fruit Trade, and one also on the Forestry of the Western States and Territories, are of much importance. These three articles we have mentioned are, in fact, evidences of a new departure. It begins to look as if agricultural topics of national importance will hereafter be discussed by competent persons in the annual publications of this Department. We would suggest that an exhaustive article on semi-tropic fruits is worth writing; and also, that Wines, Raisins, and Grapes are not yet fully "written up."

The reports on sorghum and corn as sugar-producing materials have already attracted much attention. The report of grasses and forage plants is no less valuable, being accompanied by many illustrations. Of interest to stock-raisers is the long report on the diseases of swine, of which we have spoken in a previous issue.

TRANSACTIONS OF THE MASSACHUSETTS HORTICULTURAL SOCIETY FOR 1879.—Mr. Robert Manning has forwarded us this valuable horticultural report, which is a mine of good things. It contains papers and discussions upon "The Influence of the Stock on the Graft;" on "Grafting the Gooseberry on the Mission Currant," and other grafting experiments; on "Diseases of Forest Trees;" on "The Cultivation and Marketing of Apples;" on "Roses;" on "Picking and Keeping Fruit," together with various reports and resolutions. We shall hereafter quote from its well-filled pages.

DISEASES OF SWINE AND OTHER ANIMALS. Government Printing Office, Washington.

This book is considerably out of our usual line of work, and yet so many of our readers are interested in the domestic animals that a brief notice appears desirable. It is a special Report of the Department of Agriculture on the contagious diseases of swine and other animals, and it contains data of great general value. As is probably well known to every far-

mer in the United States, a malignant swine-plague has been increasing year by year. In one season, it is estimated, the loss in hogs alone was not less than $20,000,000. These investigations must, therefore, rank among the best efforts of the Department. The disease is pronounced purely infectious and contagious, so its communication to healthy stock must be prevented. This work, which covers 292 pages, is illustrated with many full-page plates, some colored, and showing magnified portions, and the results of blood investigations on both healthy and diseased animals. It also considers contagious lung fever in cattle, rinderpest, and glanders among horses.

The *American Naturalist* for July to December has just been laid on our table. It is, though late in the season, a most welcome publication. We should much like to see it helped and encouraged by whoever loves scientific work. It treats of a wide range of topics, as will be shown by some of the articles which have appeared during the past six months. In July Robert E. C. Stearns, of the University of California, contributed a treatise on the "Forms of Seeds as a factor in Natural Selection in Plants," and Prof. Cope considers the "Zoology of Montana." In August there are long articles on Indian Languages, on habits of Tarantulas, on the Formation of Cape Cod, etc., Brazilian Corals, and Dr. Barnes' article on the "Hillocks or Mound Formations of San Diego," are features of September. October contains an article on "Microscopical Fungi Infesting our Cereals," besides accouuts of new Myriapods, fresh water Entomostraca, notes on Washington Territory Thrushes, etc. November opens with B. B. Redding's article on "How our Ancestors in the Stone Age made their Implements," one which we should have made extracts from had it come to hand earlier. Isaac C. Martindale treats of Colorado plants. W. N. Lockington, of our own Academy of Sciences, gives notes on Pacific Coast fishes. In the December number we are given a "Historic Sketch of the Science of Botany in America from 1635 to 1840;" and Prof. Cope treats of the "Extinct American Rhinoceroses." We have mentioned only a few of the leading articles of the *Naturalist*. The sub-departments are on Botany, Zoology, Anthropology, Geology, and Paleontology, Microscopy, scientific news, and other important notes.

Vick's Monthly for December takes up the Everlastings, giving a colored plate of some good varieties. "Botany for the Little Folks" is still as interesting as ever. Some one has been using the surplus tubers of the Madeira vine for cattle feed.

The *Garden* gives a colored plate of double Potentillas, which shows that we have in this State no variety of this fine plant which is at all comparable with the best English varieties. It is therefore recommended that our nurserymen proceed to procure them. And, in this connection, we will state that too many of our gardeners, nurserymen, and wealthy horticulturists, are apt to go without the books and papers which they really need in their work. A progressive garden-lover will try to take at least one good Californian publication, one from the Atlantic States, and one from Europe. We do not see how he can otherwise be up to the times in his business.

The *Semi-Tropic California and Southern California Horticulturist.*—This new venture, a consolidation of two journals, begins the new year with a fancy cover, and is changed in size to a sixteen page quarto. The title sounds rather cumbrous owing to the repetition of the word California. John H. Shields contributes a valuable article on Los Angeles County. We think there is room for a good horticultural journal in the southern part of our State; but this one will probably be a failure, unless it is edited more with the pen and less with the scisscrs. We also notice an article entitled "The Foothills for Homes," which was taken from a recent editorial of the *Evening Bulletin* of this city, but is not credited to any source whatever.

Land and Home is a new claimant for public favor. It is edited by Mr. E. S. Libby, formerly of the *Scientific Farmer*, and is published in New York. We notice that P. T. Quinn has begun a series of articles on pear culture. He notes two errors of pear-planters, the planting of too many kinds, and the use of trees on quince stocks. Our orchardists in this State have committed both these mistakes, but we are learning better.

The *Florist and Pomologist*, a Pictorial Monthly Magazine of Flowers, Fruits and general Horticulture. Edited by Thomas Moore, F. L. S., F. R. H. S.. etc., London. The plates in this number represent the first a bright scarlet ivy geranium, the other a new nectarine called the Galopin, a seedling raised at Liege, Belgium.

Catalogues, etc., Received.

[We shall acknowledge the receipt of all Seed or Plant Catalogues, Pamphlets, Reports of Horticultural Societies, Agricultural Reports and similar documents.]

Vick's Floral Guide, No. 1, 1880, with a beautiful colored plate of Sweet Peas.

Trade Seed List of C. Platz & Son, Erfurt, Prussia.

Literary Bulletin. Houghton, Osgood & Co., Winthrop Square, Boston.

Descriptive Catalogue and Price List of Plants and Trees grown and for sale by Felix Gillet, Nevada City, Cal.

John Rock, San Jose, Cal. Trade Catalogue for season of 1879-80.

Arnold Peutz, Jacksonville, Florida. Rustic vases and stands.

THE

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AND

FLORAL MAGAZINE.

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THE PLANTS OF MOUNT LASSEN.

By MRS. R. M. AUSTIN, Plumas Co., Cal.

That long-deferred hope of standing on the highest point of Lassen's Peak has at last been realized. My husband, Josie, Oliver, Mr. J. M. Emmert, and myself, left our home in the Big Meadows, on Monday, July 28th, 1879, to spend a week or ten days in the vicinity of Lassen, and to ascend the Peak.

We went up the east side of the Meadows by the "Big Spring," stopping for a couple of hours at noon near the ford of the north fork of Feather River. I found but few specimens for my herbarium here, as the sheep and grasshoppers had eaten everything in the form of vegetation — except the trees. Did you ever see grasshoppers so thick that the ground resembled one brown, moving mass?

The road leaves the Meadows at this point, bearing in a north-westerly direction through heavy pine timber, where the undergrowth is the beautiful Ceanothus velutinus, and Arctostaphylus glauca. The scenery for the distance of twenty-five miles was very monotonous, as we were shut in from everything beyond by the dense growth of trees; but when we came to the entrance to Warner Valley, everything changed. We enter a narrow pass, on either side of which arise perpendicular walls of a volcanic rock, two or three hundred feet in height, and covered with large trees, some overhanging the precipices.

We camped in the southern part of the valley, near a clear creek, where the children had a happy time catching trout, and I was busy looking for new and rare plants. I found Lonicera cœrulea; L. involucrata; L. conjugialis (all of them in fruit); Eupatoriem occidentale, Hook.; Silene Menzeisii; Pentstemon gracilentus; Epilobium ariganifolium (?); Glyceria pauciflora; Trisetum elatum; Thalictrum sparsiflorum; and Viola blanda. Growing along the creek, among the willows, was a beautiful white Aconitum, which Mr. Sereno Watson writes me is A. Columbianum (A. Fischeri of the books).

We left Warner Valley on the 29th for Hot Spring Valley, which we reached about noon. I spent the remainder of the day in netting a rare species of Butterfly (Coleoptera), peculiar to the high Sierras, and in collecting botanical specimens. There are acres of Mr. J. G. Lemmon's new Carydalis Caseana (Gray) growing along the streams which flow into the valley from the west, filling the air with its delicate

fragrance. Among the rarer plants found here, were Coltha biflora; Saxifraga punctata, Linn.; Gentiana simplex; Pellaea densa; Cryptogramme acrosticordes; Aster integrifolius; A. saluginosus; A. Shastensis, Gray; A. adscendens, Lindl.; and Senecio Fremonti.

We visited Lake Solfatara (Boiling Lake) on the 30th of July. Dr. Harkness gave it this name a few years since, on account of the great quantity of sulphurous vapor arising from it, and the acid properties of its water. The lake is situated on the mountain about half a mile south-west of Hot Spring Valley, and is surrounded by a dense forest of Abies concolor. It is in a circular depression, the walls varying from ten to fifty feet in height, and it covers an area of five or six acres. Its water is of a milky whiteness.

I descended to the lake on the south-eastern side, where hundreds of jets of steam were escaping from the honey-combed walls, and the leaves and small twigs of trees that had fallen here, were charred black by the heat, and my shoes became too warm for comfort. But I was well paid for the venture, when I stood by the lake, which at this point is one mass of boiling mud, bubbling up, breaking with a dull sound and a puff of steam, then rolling over lazily toward the sides. Some of these boiling caldrons of mud were almost of an inky blackness; some were white, and others a delicate pink color. I gathered some specimens of grass near one of them, the common name of which is "Job's Tears" (Coix Lachryma).

On the south-west side of the lake there is a space of several square rods, where the boiling has ceased, and the mud-waves have become hard. I walked out on this part to test its solidity, and Mr. Emmert and Oliver secured some specimens which resemble chalk in color and consistency. We climbed out of the basin up a rocky ravine, and not more than half way up I found three nice plants of Sarcodes sanguineæ, and a beautiful little Allium.

The road from the lake to the Geysers, which are on the mountain two miles farther south, is made cheerful by the bright blue flowers of Pentstemon azureus, P. gracilentus, and Delphinum decorum, and also by the bright golden flowers of Eriogonum umbellatum. The Geysers are also in a depression, but they have an outlet which flows into Willow Lake Valley, a mile or so farther south. There are two of these boiling springs, only about a rod apart. The larger and more active one, was throwing up a continual stream of water five or six feet high, while the smaller one was only boiling. I collected, near a cold spring a little way below the Geysers, specimens of Asplenium filixfœnina, and of Lilium pardalinum, Watson; and on the hills above them, Acer glabrum, and Lilium Washingtonium; and at the outlet of the cañon into Willow Lake Valley, Dicentra formosa, and Phacelia Bolanderi, Gray.

We returned to Hot Spring Valley, which was the terminus of the wagon road, and ten miles from the base of Lassen; and as we all wanted a long day on the Peak, we thought best to go on to King's Valley, which is five miles nearer, or only three miles from the base. We had taken along an extra horse, besides the two we worked in the harness, and as there were five of us, and only three horses, this ten miles of the most difficult part of the route must be made by alternately walking and riding. We took some blankets and provisions for one day, and were on our way by two o'clock.

The trail between the valleys is up, up. We often found it difficult to lead the horses over the rocks, and around the precipices. I had charge of one of them, and I soon fell behind, tying up the bridle, leaving her to follow the others.

The flora at this altitude was nearly all new to me, so I was soon busy snatching specimens for my portfolio, and endeavoring not to lose sight of the rest of the party, as it is difficult to track the horses over the rocks. Here I saw, for the first time, the beautiful Bryanthus Breweri, Gray, with its dark green spruce-like foliage, and its rose-colored flowers. I lingered so long admiring it and collecting specimens that I was left behind. I hastened on till I heard the children calling me, and when I overtook them, they were waiting for me by a lovely little lake, and gathering specimens of Kalmia glauca for me.

We arrived at King's Valley just as the last rays of the setting sun were disappearing from Lassen; so we crossed over to the opposite side, and camped in the edge of the timber, lighting some large, dry logs, so that we might have a fire all night, to keep off the bears and mosquitoes. We prepared a hasty meal of boiled venison, tea, etc. After which we spread our blankets down on the soft, dry sand, using some willow twigs for pillows, and so tired were we all that we were soon sleeping such sleep as is rarely disturbed by dreams. I was aroused just as day was dawning by the cry from Mr. Austin of "All aboard for the Peak," and before the sun was shining we were on our way, following up a chain of three small valleys, the last of which was covered with water. The road here winds up the mountain in a zig-zag fashion, and we soon found ourselves in snow. Winter in July! But the crust is quite hard, and the horses walk over it safely for about a mile, when the rays of the sun begin to melt the snow, and we have to leave them. A mile and a half farther over melting snow, rocks, and water, and we stand in a little grove of Tsuga Pattoniana, Nutt. (hemlock), at the base of Lassen.

We begin to ascend. I am in a new world! Not a single plant that I have ever looked upon before! The rocks are free from snow, and out of their crevices are peering such rare treasures for me. Here is a beautiful Pentstemon not over two inches high, with large blue flowers. This strange little Crucifer, Mr. Watson writes me, is Cardamine belledifolia. A little higher up is Anemone Drummondii, "new to California," but found some fifty years ago by Drummond in the Cascade range of mountains. There is Erivagonum pyrolafolium, Erigeron compositum, Phacelia namantoides var., Hulsea nana, and Arenaria verna var. hirta, which is also new to California, and so many other rare ones that I can not name them all.

The ascent with me was slow, as I had to examine every plant and place some of each kind in my portfolio. Voices far up the heights were calling me to hasten, and as one after another of our party reached the top, I could see hats waving and hear them cheering, so I knew that a grand view awaited me. But I must not pass by these lesser treasures around me. Here is the crimson snow of which I have so often read; west of me, at the base of the rock on which I recline, nestles a little lake, whose water is as blue as indigo, and in the distance are other and larger lakes; the world below is enveloped in a thin haze, or smoke, giving to all nature such a quiet, dreamy look, that I inhaled the spirit around

me. How happy I was, forgetting the busy world below, with all its cares.

A little more climbing, and I stood on the summit. Here the air is so pure and life-giving, the scene so grand, that I felt like a new being. I was silent, for words could never paint the grand beauty which my eyes beheld. I looked west upon Shasta's snow-crowned cone, the Sacramento Valley, and beyond, still further, the snowy Coast Range; south and east were the Big Meadows, Mount Dyer, Mountain Meadows, and Indian Valley. Turning to the north a shudder creeps over me. A single wrong step would result in a perpendicular fall of thousands of feet! It was from this point that the United States Surveying Party made their observations in 1878.

The day was waning, and soon it was time for us to begin our backward march, but before leaving I collected all the plants I could find at an elevation of more than ten thousand feet. They were: Draba aurea, Smelouskia calycina, Spraguea umbellata, Polygonum Shastense, and one, which I took to be a Rumex, was above all others.

The children—which includes all of us—had a merry time in making the descent. We followed the beaten path down over the steepest part to avoid accidents, and then took a more direct route over the loose lava, great masses of which would be set in motion, carrying us with it for many rods at a time. So we went down with little labor to the snow line, and then there was no trouble, only to keep from going too fast, which was sure to result in a fall, followed by peals of laughter from the more fortunate ones.

We were in Hot Spring Valley before sunset, and after a night of the sweetest sleep, we commenced our homeward march, turning aside to spend a day at Willow Lake, so that the children might have a good time fishing, and the men hunting.

We reached home on the second of August, having been gone seven days, and felt well repaid for the toils of our trip, by the large amount of health and happiness we brought home with us, to say nothing of the rare plants I secured, which will afford me pleasant employment in arranging and studying during the long winter evenings which are close by, and in distributing to my many friends, who, I know, will receive a portion of my own happiness.

A CITY GARDEN.

By T. E., San Francisco.

I am a dweller in the city by the sea. My occupation has nothing in it in common with the tilling of the soil. But I have a fondness for it, nevertheless. It was engrafted in my nature in my youth, and it has strengthened with increasing age. Perhaps the very fact that I have neither handled a plow, a scythe nor a hay-rake since my boyhood, lends increased charms in the soil-tiller's life to me.

"'Tis distance lends enchantment to the view."

Were I what is irreverently termed a "clod-hopper," the romance of the thing might disappear. As a dweller of the city, I have but little opportunity to test my affection for the soil-tiller's occupation. What little I have is embraced within the four boundaries of a plat of land 30 x 10 feet. This is my city garden. It is where much of my daylight leisure is spent, in a contest against weeds, slugs, bugs, drought, sparrows, cats, and vermin, and in nursing to maturity such flowering plants and shrubs as I can crowd comfortably together within its narrow limits.

Now, the cultivation of a city garden is by no means child's play. If you want to be reasonably successful — if you expect to reap where you have sown, to pluck where you have pruned —you have got to maintain a ceaseless warfare against a host of remorseless enemies. There is the little black snail, commonly called slug, as destructive as he is slimy. He is a midnight marauder. Like most thieves he shuns the daylight. Note those tiny burrows near the base of the shady side of the dwelling. They are the caves which the slugs have excavated to conceal themselves during the day. You will also find the cunning rascals sheltering perchance under the damp and cool leaves of the daisy border. Have you studied their habits? If you have not, it may trouble you considerably to get rid of them. If you have, you will have observed how in the twilight the double-horned marauder sallies forth noiselessly from his cover and crawls stealthily in the direction of the pansy-bed to feed on the tender shoots and leaves. And you will also have observed that with the first signs of daylight he begins to retreat, over the same path. As soon as I found out the habit of the slugs that infested my city garden, I knew how to manage him. A little salt, sprinkled over the walk which he had to traverse to and from his feeding ground, settled the question. It did the walk no harm, but it made short work of the slugs. Salt has a thawing influence on this class of garden pests, and, properly administered, it is the most effective of remedies. But beware of placing it anywhere near the roots of your plants, otherwise they will go the way of the slugs. I know I lost some of my choicest plants through a little carelessness this way.

"My rose-bushes are covered with green bugs," remarked a friend, "and I do not know how to get rid of them. I have smoked them with tobacco stems, washed them with soap-suds, and used bottles of insect powder with only temporary benefit." I tried the same remedies with about the same want of success. Every rose my bushes produced got to be rather an expensive luxury. The question was being seriously considered as to whether the game was worth the powder, when, by the merest accident, it was discovered that a dousing with a strong head of water through the garden-hose did the business of sweeping these pests out of existence most thoroughly. If this is done every time the garden is watered, there will be no more green bugs to trouble anybody, and the bushes will very gratefully return the attention with glossier foliage and a more abundant crop of perfect blossoms.

The man who advocated the introduction of the English sparrow as a destroyer of garden pests, deserves the everlasting frown of the city gardener. The saucy and impudent little fellow will steal every seed you lay in the soil and nibble every tender shoot that comes above ground, and carry on his depredations under your very nose. He is also such a pugnacious and quarrelsome fellow that any other feathered pet you may have welcomed to your garden is soon compelled to surrender. There is a colony of sparrows established on the dwelling of my neighbor across the way. Two years ago, the colony consisted of one pair of birds. They built their nest in the ornamental work at the top of his parlor bay window. That pair has since become a mighty host, and the colony has taken possession of every available nook on every building in the neighborhood. For several years my little garden has

been the summer resort of a pair of humming birds. They have made a fuchsia, which I have trained on a tall fence on the west side of my little plat —partly to cover its nakedness, partly to act as a wind-break—their summer home. I am morally certain they build their nest within its branches, but the most diligent search has not revealed it. But that is nothing strange. I know a friend who reached out his hand to cut off with his pruning knife what appeared to be an abnormal swelling of the bark in a fork in one of the branches of a walnut tree, and just as the fatal stroke was about to be taken, discovered to his astonishment that the offending swelling was a humming bird on its tiny nest. It is interesting to note these birds hanging by their long bills to the pendant flowers which load down the long and slender branches of this fuchsia tree. These birds enjoyed, up to last fall, the undisputed freedom of my garden. But the vagabond sparrows from across the street inaugurated a war of invasion just before the humming birds migrated to their winter quarters. And since the departure of the latter these saucy scamps take especial delight in gathering together on the branches of the fuchsia tree, filling the air with their unmelodious chirpings.

A house drain runs through the garden. The man who put it in had but little faith in the future, or he wouldn't have made the pipe of wood. It has been the means of adding one pest more to the garden's list than there otherwise would be. This fellow is in the form of an ancient rat, whose bristles are gray and coarse. He burrows a new hole just as often as the old one is closed, coming up usually in the middle of some cherished cluster of flowering plants or undermining a carefully nursed shrub. I have tried a great many ways to catch the intruder, but without success. I discovered that the objective point of his travels was my chicken yard in the rear of the premises, and I artfully concealed a spring trap in his path. The rodent would not have troubled me any more had I secured the trap with something more difficult to sever than ordinary twine. The next morning I found that he had not only been trapped, but he had also cut the string in two and carried off the trap. The regret caused by the loss of the trap was somewhat counterbalanced by the belief that the strange bracelet would be the end of that rat. I have been much mortified several times since by ocular proof of the rat's survival, limping on three legs. Every subsequent attempt to capture him has failed. He blocks the game, springing the trap by pushing a stone on the plate or some other equally effective device. I have long ago given up the contest, and wait patiently for this Ishmaelite of my city garden to give up the ghost from old age.

It is very annoying that my neighbor's cat should keep a noonday and eventide watch over that crippled rat's hole and perchance make a footstool of my petunias while doing it. It is true that these weary watches are somewhat ruthlessly disturbed by a sudden shower of rocks. But I invariably observe that the garden plants in the vicinity suffer much more ordinarily than the cat.

What I have stated in the foregoing forms mostly the cloudy side of city gardening. But it has also its silver lining. When I hear the exclamation of delight slip over the lips of my visiting friends at the wealth and size of flower in that pansy bed; the gorgeousness of my petunias; and the brilliant

hues of my verbenas; the rich golden of that cluster of marigold; the extraordinary size of that fuchsia blossom; the fragrance of my pinks; the wonderful spikes of my mignonette, and the rarity of that geranium, I feel rewarded for all the trouble. The pleasure which the bouquets presented by my little daughter to my sick neighbor amply repaid the toil and the care taken to produce them. Then there is a cheerfulness in the surroundings of a city house with a garden, which may be thrown in, in a general way, with the net proceeds of the institution. The labor in the garden gives exercise to the body which would be otherwise dwarfed by a sedentary occupation. There is also a freer circulation and a better digestion derived from it.

The culture of a small garden gives one also an opportunity to study floral growth in all its stages. You will probably be interested by many strange and curious developments, in and out of the regular order of things. My garden plants have had a strong inclination for some reason or other to double. There is a fuchsia which produces double branches, which in multiplying split instead of budding. Last season a triple-spathed calla lily was one of the garden's curiosities, and it has become a very common thing for my dahlias to develop double flowers on the same stalk. It is a fortunate thing for a poor man that this freak is not contagious, otherwise there might be an unreasonable number of twins in the family.

THREE VALUABLE HARDY CACTI OF UTAH.

By A. L. Siler, Ranch, Utah.

When the cold chilly blast of December whistles around us, we can sit down by the fire and let our minds ramble over the past. I now propose to give you some of my reminiscences. Living at an altitude of six thousand five hundred feet above the sea level, where the winter is five months long, you would hardly expect that the cactus would be found to any very great extent, but for all that Mamillana specus grows on the brown-colored clay hills even here. It is usually found growing single, but it is not rare in clumps from three to twenty. The usual size is ten inches high, and as much in diameter, with one-third of the plant buried in the earth. When more than one grow together there is usually a larger one with many smaller ones surrounding it, hence the local name is the hen-and-chickens cactus. It is covered with black and white spines, the black predominating, and bears in the early summer a purple flower about the size of a quarter of a dollar. The flower is crisp and papery in appearance, and it is not unusual for a single plant to bear one dozen flowers. It is hardy.

Mamillana vivapera, var. M. Mexicana, is another plant very much like the former in its habitat, with a rosette of short white spines on the new growth, which are replaced with black spines the next year; the spines are larger than those on M. specus, being about three-fourths of an inch long, and they are so arranged as to give the plants a beautiful effect. The flowers are bright red, about the size of half a dollar, and they are very abundant. The flowers are found on both the main plant and the smaller ones that surround it, and I know of no cactus that shows to better advantage when in flower. The seed vessels are three-fourths of an inch long by one-half an inch broad, of a greenish-white color, filled with a very sweet pulp, and small black seeds. This plant like the latter is hardy.

Echinocacti phornix, or thousand

flowering cone cactus, growing generally on gravelly points, presents more features for attraction than any other hardy cactus. It is seldom found single. Each leaf resembles a small pine cone in size and shape, and it is not uncommon to see five hundred of these cone-like leaves springing from a single root. Its spines are short and black, flowers crimson and very abundant, but they do not open well. Like the others it is hardy.

PLANTS FOR THE GREENHOUSE.

By A Gardener.

It is extremely difficult to make a greenhouse or conservatory look well, or indeed grow well, unless we have a few well-grown plants to begin with. To the amateur or new beginner it is perhaps not an easy matter to select or know what to get for his greenhouse, and to be tolerably sure that they will do well. The palm family come in largely as a greenhouse decorative plant. In selecting palms for the greenhouse select such as are scarcely hardy enough to stand outside without being injured. Areca rubra, A. Fosteriana, A. Bauerii, Carypha Australis, Seaforthia elegans, Phœnix sylvestris, and other plants of like character, such as Cycas revoluta, Pandanus utilus, P. Veitchii, P. Javanica, would do well in a greenhouse, and give the necessary shade and foliage to relieve and show the flowering plants to advantage. Musa Cavendishii (or dwarf Banana) can be grown in a small greenhouse, as it will fruit when about six or seven feet high and is decidedly tropical in its appearance, and its habit of growth answers well to give shade to other dwarf plants, such as Ferns, Fittonias, Selaginellas, Begonias Rex.

With the larger plants mentioned it will be seen that a greenhouse can be made to look furnished and enjoyable. Now to fill up with and make a variety. Tree ferns are grand objects in large greenhouses. The best are: Alsophilias, Dicksonias, Cyboliums, and for small greenhouses Lomaria gibba, which is a beautiful dwarf tree fern. Other valuable ferns are Adiantum cuneatum (Maiden's Hair Fern), A. amabile, A. colpodes, A. concinnum, A. Farleyense, and A. gracillimum—the two last named being very striking and beautiful. A Farleyense is noted for its large, drooping fronds of various shades of green, and sometimes the young fronds are tinted with a pink color. A. gracillimum, on the other hand, is exceedingly delicate in its fronds like A. cuneatum, but a great deal finer. Well-grown plants of either will arrest the attention of the most indifferent plant-lover. Worth mention also are Ohychium Japonica, Platycerium alcicorne (Stag's Horn Fern), P. grande, Pteris serulata, P. serulata crispa, P. tremulo, Polypodium aureum, are desirable and of easy culture; Gymnogramma Laucheana, a magnificent golden fern and a strong grower, which soon makes a good specimen; G. Tartarica, a silver fern; G. Peruviana agyrophilla, Lygodium scandens, climbing ferns; Nephrolepsis exaltata is a most desirable fern for a hanging basket as a centre plant, with Maiden Hair Fern planted around the sides of the basket, and in a short time it will become covered with fronds and will look well a long time. The ferns here mentioned will do well with ordinary greenhouse treatment.

Begonias are a very important family of plants for the greenhouse. The Begonia Rex section of the family are grown for their fine ornamental foliage, the flowers are pretty as well; they delight in a moist house, and grow well in the shade of other and larger plants

that may occupy the greenhouse, and they group and contrast well with ferns. Then there are other species and varieties of taller growth, which make beautiful flowering plants for winter, and are admirable for bouquets. Begonia Fuchsiaoides and B. incarnata are well-known varieties of this class. Then there is another species of tuberous-rooted Begonias of more recent introduction, which is especially desirable for summer flowering in the greenhouse. B. Boliviensis is the type, and numerous garden varieties which have been raised give great variety of color. I am satisfied that they will make beautiful plants for bedding out in protected and rather shaded situations.

HISTORY AND CULTURE OF THE PINE-APPLE. No.—1.

By Rev. Jas. H. White, Florida.

The value of an utterance, an observation, or an opinion, depends upon the standpoint of the observer. The reader naturally asks whether the writer is a mere compiler or an actual cultivator of the fruit he writes about? The Volusia County *News* of July 29th, 1879, may answer. Its correspondent had visited Indian River and our "Island Home" in May preceding, and writes: "In grape culture I find the most marked success on Merritt's Island in the case of Rev. J. H. White, who commenced there on a piece of wild land three years ago. * * In addition to this, his young orange grove is looking finely, while some six hundred fruiting pine-apples are gradually rounding into form. This gentleman, over sixty years of age, infirm of health and with but little means, has done most of his own work, and now has the pleasing prospect of a comfortable support in his declining years as the reward of his labor."

The natural order Bromeliaceæ, or pine-apple family, is composed of tropical and sub-tropical plants, chiefly scurfy epiphytes or air plants—*i. e.* plants growing on other plants, but not nourished by them. The order in the United States is represented by a single native genus (Tillandsia), all of which are air plants. Several species of this genus are found in Florida, and some of them not elsewhere.

The pine-apple (Ananassa sativa) belongs to another genus of the order, and is closely allied to the epiphytes. It is a native of tropical America. The first discoverers found it growing wild in the West Indies and Central America, and Humboldt found it in the valley of the Oronoco. It is found growing wild in other countries, and may be found indigenous thereto. It is equally certain that it has been widely distributed by human agency. Columbus found it on the Island of Gaudaloupe in 1793, but it was not brought to Europe until several years later, where it was given the first rank among all known fruits. About the year 1593 it was carried to China by way of the Pacific from Peru, and near the same time was introduced into Bengal and Java.

This description answers to the one mostly cultivated here and on the Keys south of us, also on the Bahama Islands. It is called the red pine because of the red appearance of its leaves, and the commercial pine because of its superior shipping qualities, and is of the greatest commercial value. The leaves are from ten to forty inches long, thick and narrow, linear lanceolate, their points and edges armed with sharp spines. Its entire florescence (except the petals, which are blue) is of a bright red, and the coming bloom is heralded by a brilliant blush covering the inner surface of the plant—that of the Sugar

Loaf is a delicate pink. The fruit is borne upon a stalk, rising from the centre of the plant, from 1 to 3 feet high. The suckers are new plants growing upon the stalk from the axis of the leaves near the ground. Here they generally are two in number appearing soon after the blossom, and if permitted to remain, will fruit in one or two years. I permit only one to remain. The slips are new plants, smaller than the suckers, growing from the stalk, and clustered around the base of the fruit. Their number varies from two or three to a dozen or more. The crown grows upon the top of the fruit, and is often surrounded by very small secondary crowns called crownlets. I have given the names by which these offsets are known here on the Florida Keys, and on the Bahamas.

The fruit of all the varieties grown here is yellow, that of other sorts is said to be purple, scarlet, green, white, and black; it is mostly conical, sometimes globular, and differs in form, flavor, and consistency, weighing from two to fifteen pounds, according to variety, soil, climate, and cultivation.

Its propagation is by means of the offsets and seeds. Suckers are the most valuable because they are the largest and fruit the soonest. I think their size is the measure of their value. Slips are most abundant, and as a consequence, most used for new plantations. Crowns are also used, but a prejudice against them grows out of the popular "say so" that it requires a long time to fruit. My experience justifies the conclusion that in point of time there is little if any difference between crowns and slips. It is also said of crowns that like the seeds they produce new varieties. I think this also is a mistake, as I can see no good reason why the crown should differ in its nature from the rest of the plant, as it is only the continuation of the stalk up through the fruit, and the crowns that we have fruited have all reproduced the original sort. Crownlets are but little used because they are so small.

New varieties are produced from seed, but I have never seen a seed, and probably have never seen an apple that contained one. The seeds are hard to get. A plant obtained from seed requires a long time to fruit—one writer says "under favorable circumstances twelve years"—and when it does fruit, the chances are in favor of its being worthless. The production of a new variety is therefore no child's pastime.

Varieties are now abundant from which to select. One European catalogue gives the names of fifty, and it is said that fifty-two have been fruited at Chiswick, England. They are there grown under glass and attain a great size, but are wanting in the flavor that only a tropical sun can impart. The varieties most highly prized there are Queen, Lemon Queen, Moscow Queen, White Providence, Black Jamaica, Black Antigua, Sugar Loaf, Brown Sugar Loaf, Ripley, and Enville. In connection with their cultivation in the West Indies we meet with the additional names of St. Vincent Rothschild, Egyptian Queen, Bird's Eye, Strawberry, Smooth Cayenne, Prickly Cayenne, Spanish or Red Spanish—the same as the commercial pine. Being closely allied to the air plants it has something of the same nature, and in some respects seems independent of the ordinary laws of vegetable life. Like the cactus it takes root all the sooner for being exposed to the sun for a time before planting. It may be days or weeks as is most convenient. If nurserymen or others "entice thee to buy rooted plants, consent thou not."

I would rather have the slips before they are rooted than afterward, unless the operation has increased their size. An increase in size is an increase of value, but the roots have no value in transplanting.

The pine-apple is a tropical plant—*i. e.* it can not endure frost without injury. A slight frost will not kill the plants, but will badly injure the leaves. If not near fruiting it seems only to diminish the size of the plant, which it will soon regain by growth. If near fruiting when the leaves are destroyed, the fruit will be small. Water frozen in the plants is said to kill them, but of this there is little danger here as the winter is our dry season. December and January are our coldest months, and the usual rainfall of each is about two inches.

Allied to the air plants, like them it is not a gross feeder, and because of this it does well on poor land. As grown here there seems to be no just proportion between the size of the fruit and the richness of the soil.

Island Home, Brevard Co., Fla.

L. PARRYI AND L. MARITIMUM.

By PARISH BROTHERS, San Bernardino, Cal.

In answer to J. B. H.'s inquiries regarding the difference between these two lilies, I append the following descriptions:

L. PARRYI—Watson, Bot. Cal.—"Bulb somewhat rhizomatous, of numerous crowded scales, fleshy and jointed, about an inch long, the upper joint broadly lanceolate; stem slender, glabrous, 1 to 2 feet high, 2 to 6 flowered; leaves usually scattered, occasionally the lower ones in a whorl; linear, oblanceolate, 4 to 6 inches long, and ½ inch wide or less, mostly acuminate; flowers horizontal, pale yellow, sparingly and minutely dotted with purple; segments 3½ inches long and 5 or 6 lines wide, with long, narrow claws, slightly spreading from the base; stamens and style ½ inch shorter, equal; anthers oblong, brownish, three lines long; capsules narrowly oblong, somewhat acute, 2 inches long by ½ inch in breadth. It is of the section Eulirion, to which belongs also the Californian L. Washingtonianum. It is distinguished from the latter especially by its small bulbs with jointed scales, by its more scattered and narrower leaves, by its small yellow flowers with less spreading segments, and by its longer, narrower, and more acute capsules."

L. MARITIMUM—Kellogg.—"Leaves alternate, or rarely verticillate, chiefly clustered near the base, narrowly oblong-lanceolate, sub-obtuse, narrowing into a short petiole, three-nerved, quite glabrous throughout; upper leaves cauline, successively diminishing to minute linear-lanceolate serrate leaves, barely ¼ inch long; peduncle elongated-terminal. Flowers few, 3 to 4, somewhat nodding, short, or equilaterally campanulate; segments, lanceolate, slightly revolute, equal; style short, straight.

"This lily has been grown for several years in England as a form of parvum, but the flower is more campanulate, and the tips of the segments are more reflexed, while the color is more richly tinted with crimson, and the spots are more numerous and darker. The bulb is said to be like Columbianum, and if so, this kind must be placed very near that species. This differs essentially, according to Dr. Kellogg, from Canadense, its nearest kin, in the form of the stamens. It is a small-flowered lily, found in low, peaty meadows, exposed to the bleak, foggy climate of California, near San Francisco. The flowers are of a deep reddish orange-brown, spotted with dark purple inside."

This description is taken from an English work, otherwise you would not see that truthful remark about the damp, foggy climate of San Francisco. No Californian will venture to say "fog" to the coast dwellers, nor is it considered policy to mention wind in the city by the Golden Gate.

As to L. Parryi, we have raised quite a bed of them procured fresh from their homes in the hills. As it grows wild the bulb is decidedly rhizomatous, but cultivation changes its shape considerably. We have some that are almost perfectly ovoid. After growing one year in light, sandy soil, the bulb attains a size of 3 to 4 inches (though but rarely). Such bulbs produce as many as twenty flowers. The leaves usually are scattered for about one foot from the ground; then several are set in whorls, becoming alternate, but showing a constant tendency to grow in whorls by coming two and three joined at their base in a sort of demi-whorl. The flowers are pale lemon yellow, dotted inside very faintly, low down in the tube. What surprises me most is the fact that no one who has written about it has mentioned its delicious fragrance —as powerful or perhaps more so than that of L. candidum. I believe I am right in the opinion that at the time Dr. C. C. Parry discovered it it was not in bloom. His description was taken from material procured afterward.

This rare lily is creating considerable interest among cultivators of rare plants. If it will do elsewhere as well as it has done with us, it is destined to become a favorite. I have great faith in its adaptability to other situations. It is a native of damp, boggy, black ground, though I found some very fine bulbs growing in clear, washed gravel by the side of a mountain stream not less than 9,000 feet above the level of the sea. I have also found it as low down the slopes as 2,500 feet. This lily seems to be confined to a very limited section in the vicinity of San Bernardino, growing principally in one locality, though scattering bulbs are found here and there through the hills as mentioned, but in very limited quantities, as most of the favorable situations have been ravaged by the desolating sheep.

Most of the bulbs have already been found, and next year's search will reveal the poverty of the land. I believe that the unusual quantity that has been produced from this one spot has created an erroneous opinion that this lily is abundant and easily procurable. From a somewhat careful examination of this section for over one hundred miles through the mountains, I believe that this lily is of rare occurrence, and is widely scattered. I mention the following as a sample: in one place I found one bulb only; eight miles further down I found two; two miles from there I collected about a dozen, which last may be considered, the bonanzas excepted, a good day's work.

I believe that this will prove one of the best lilies to hybridize, from its free seeding, easy adaptability to culture, changing shape of bulb, and the uncertainty of its leaves to produce themselves either alternate or in whorls. I sent out some small packages of hybridized seed to botanical friends this year, and shall experiment more thoroughly the coming season with more appropriate pollen.

A friend in the East says he has grown L. Parryi successfully, both outdoors and in the conservatory, where it proved a very good pot lily, flowering nicely in pots. Outdoors it endured a temperature of 25° below zero without detriment. It also stood the heat of summer very

well, and gave from four to ten flowers to each bulb.

L. Humboldtii with similar treatment stood the same test as to hardiness (25° below zero), growing from seven to eight feet high, and was "a perfect glory."

THE ART AND THE MYSTERY OF PRUNING.

By Charles H. Shinn.

[Read before the State Horticultural Society on January 30th, 1880.]

Pruning is one of those things which test a man's true character more than anything else he can attempt. Whatever hidden weakness, passion, or pet peccadillo is concealed in one's nature will come out if he is left alone in orchard or garden, during the days of spring, and is properly armed with the fateful shears, the trenchant axe, and the vicious saw. I am not quite sure about other people's feelings on the subject. No one ever has a right to speak for his neighbors in such a delicate matter. But it is my impression that the peculiar delight which a healthy young person feels in clipping, pruning, and poking around among the leafless rose-bushes and shrubs, is something which needs close watching.

It used to be the fashion to tell amateurs that they pruned too little; that they were too timid to cut and slash sufficiently, too regardful of the tree's feelings, and all that sort of thing. Now, my own belief is that the conscientious amateur of the nineteenth century has been told to go ahead quite often enough, and that the so oft repeated admonition "spare the shears, and spoil the tree," is often too faithfully followed. The man who prunes too much is usually a person with but a few trees under his charge; the people who do not prune enough are those with so much pruning to do that it becomes genuine work, and there is no longer any peculiar charm about the severing of boughs and the rapid click of the glittering shears. Let a man prune for day after day until he has wrapped the handles of his shears with twine and flannel, until there is an interested feeling about various spots on his hands, and until he becomes, against his will, one of the stiff-necked tribe, and he will be extremely careful not to take out too much wood.

But the trouble, of course, is to know how and when to prune. And that is a subject which I feel very much afraid of making remarks upon, for, although I have at times enjoyed pruning more than almost any other horticultural operation, still I very often feel my own lack of knowledge, and I only hope that these hints may help to suggest something better hereafter.

Let us begin at first principles. A plant is a vital organism, whose growth can be checked, directed, or injured. It may be subject to disease; its vitality may be impaired, a lack of proper treatment may cause death. I have not time, nor does it come within the province of this article, to consider the multitudinous ways in which the vital energy of a plant works, and the wonderful history of its cell-life. Gray has done this so well in his structural botany that I can only ask persons who would learn to respect the work a plant does, to study those pages. Beginning at the most infinitessimal root-hair, the chemic forces are everywhere at work. A branch, which we can clip off in a second, is the visible and concentrated embodiment of more work, on the part of the plant, than I like to think of. It is moisture, and hidden things from the ground; it is light and heat from the atmosphere. Each hidden bud is the true promise of blossoms to be, and of

ripe fruit after that. The first lesson, therefore, which I would impress upon you, is that a tree loses something each time we prune it. We must pay a price for the privilege. Whether we prune root or branch there is usually some present gain which we desire, but I do not doubt that pruning is always, in some way or another, an injury to the constitution of a tree.

Whenever we transplant a tree we prune it heavily, so as to reduce the number of buds which have to start later in the season, and to more nearly equalize the proportion between root and top. For the same reason, if you discover that the gophers have been attacking some favorite tree, the top must be cut back heavily, and the earth packed closely about the gnawed ends of the roots.

Remembering, however, that all pruning injures the vitality of a tree, it will be seen that no pruning is to be done without a positive reason. If you want to make a tree head low, cut it down to the desired height. If it is too spreading cut the buds which point inward, and so tend to close up the openings. When the tree is too upright, cut back to buds which point outward and a considerable change will be effected. These may be rather trite suggestions, but they serve to illustrate the principle that the scientific tree-pruner does not slash and make havoc promiscuously through the orchard, but works on a distinct, definite plan.

One of the objects of pruning is, to get rid of broken, or mangled limbs, or of diseased portions. This is an important part of the orchard work. After a storm some limbs will be found so twisted and broken that they are useless, and only cause bleeding, waste of sap, and consequent disease. A large, gummy wound on a tree is almost certain to destroy it in the course of time, and, after the rougher edges have been cut smooth, a coating of paint or of grafting wax may be applied.

Let us first chat about winter pruning. Winter pruning, which is usually what we mean when we speak of pruning, may be commenced as soon as the last leaf has fallen. It ought not to begin sooner. Old trees should be pruned as soon as possible after the leaves fall; with young and vigorous trees it should be delayed until spring. Some writers recommend pruning the main branches in autumn, and the fruit-bearing branches in late spring. This, however, is hardly available to every-day practice. We must, in pruning, consider the soil, the climate, the season which has passed, and the prospects of the coming year. It is a difficult task. As a rule, trees in a warm climate need much more pruning than they do in a cold one. At San Lorenzo the apple trees make ten times as much wood in any given year as they do in Trinity County.

It is important to study the method of fruit-bearing in different varieties. Some kind of pears and apples bear only in clusters near the tips of the branches. The Rome Beauty is an example. In such cases close pruning would destroy the crop. The orchardist must learn to tell the fruit buds from the leaf buds, and must avoid cutting them off unless it is evident that there will be more fruit than the tree can carry. Indeed, the trouble with our orchards being that they bear too much, judicious thinning out and shortening of the fruit branches will go far towards lessening the later expenses of picking off the simplest fruit. If, on the other hand, the formation of fruit-spurs is desired, as when some new fruit must be brought quickly into

bearing, some branches may be bent downward, with a weight attached to the end, or tied to the trunk.

Peach, apricot, and nectarine trees need a renewal of the tops oftener than do other trees. In this State we have found that when a peach tree looks feeble, and does not bear large peaches, a new and vigorous head may be formed. I prefer peach trees branched at about three or three and one-half feet from the ground. It is wonderful to observe the almost perfect regularity which is obtainable in a peach orchard. There is no tree which is more amenable to good training. Some of the handsomest peach orchards I know of are in the sunny valleys of northern Solano.

It ought not to be necessary for me to add, with reference to pruning, either winter or summer, that only the best of tools are allowable. A dull knife, or pair of shears, only mangles and bruises the delicate bark and soft wood. Aside from the waste of labor consequent on poor tools and slow work, the injury done to the tree is by no means slight. Of course, no person who wishes to be considered a respectable horticulturist will ever be guilty of climbing into and through the trees, thus peeling the bark off in spots, and otherwise injuring the trees with his heavy boots.

We now come to summer pruning. This is a system which has often been opposed. Still I find that our fruit-growers find it useful, and indeed almost indispensable. Everything depends upon the location. In those parts of our State where the soil and climate are such that new shoots are being pushed out constantly, and growth continues all summer, I cannot see any escape from the conclusion that summer pruning is essential. The theory of summer pruning, as I understand it, is this: By stopping the young growth, and thinning out the many leaves and branches, the light, air and warmth are allowed to flow through and through the tree. This ripens and develops the next season's fruit buds, which receive the sap which would otherwise have entered the new wood we removed. It is also evident that if a limb must be removed it is less tax on the tree's vitality to cut it off in summer, when it has been growing six months, than to cut it off the next winter, when it is a year old, and represents many times as much sap and cell energy.

In summer pruning of orchard trees the leader or central shoot should not be touched, nor indeed the main branches. Such weakly and useless side-growths as can never be a part of the perfect tree may be removed. Sufficient young wood must be left to promote a free circulation of the sap, and to maintain the balance of power. These remarks about taking off the side-sprouts of orchard trees must not, however, be understood as applying to those cases where a shelter of leaves is needed to protect the trunk from sunburn. There are places in the State where cherry trees must be grown very low, and the trunk well protected, or they soon scald, and perish. The natural covering in such cases is one of leaves. As most of you have doubtless observed, an old sack, or a bunch of grass or hay, is often tied about the trunk as a protection, in which case the growth of sprouts is not necessary.

The pruning of evergreen trees (conifers) next deserves a word. There is much difference of opinion concerning the pruning of evergreen trees. I believe that evergreens are punished more from a mistaken idea of what constitutes beauty in a tree than from any

real wickedness in the man who carries the shears. But, be this as it may, the stern fact remains—the conifers are a much abused class.

In the republic of trees there are two types of beauty, and only two, so far as I know of. The habit of the deciduous tree is to have a clean trunk and a spreading top. With grace and strength there is also shade. The type of the conifer is that of a pyramidal tree, widest at the base, and shade is not the principal thing we desire. I grow troubled and even angry when I see a pine, a cypress, or a cedar trimmed up against its nature to a mere fly-brush on a pole, or clipped into the semblance of a green-painted cheese-box, or squared off like a stone wall, or made to resemble a truncated cone. More's the pity. If we had more knowledge we should treat them better. Among the men who loved trees and helped to make their natures understood is Ruskin, the word-artist. Go and read of his Alps, with their unutterable summits; read of the pine forests which cling along the precipices, and in the valleys of the Tyrol, and clothe the purple peaks of the Appenines. Look, also, in our own Sierras and Northern Coast Ranges, where our native conifers yet remain in their untrammeled majesty. I think there are some here who have known what it is to ride for miles and hours, through woods of pine and cedar, or of redwood, in utter, yet happy solitude, and in the midst of silence broken only by the saucy cry of a bluejay, the echo of a woodpecker's hammer, or the garrulous chatter of a striped chipmunk. The gist of all this is, that I pity the man who does not have an affection for the noble conifers.

But the pruning, for we have wandered far enough away from that. If a man wants a hedge of cypress, cut it, clip it closely and often. Make it a solid wall of green, and keep it within limits. That is a proper thing to do. You have a hedge; no one mistakes it for a tree. But if we are to discuss trees, then all I can say is, give them room. One single individual conifer, so treated as to bring out its best characteristics, is worth more to the looks of a man's grounds, and does him more good, than is possibly obtainable from pyramidal miles of tortured specimens. A tree whose pruning has aided, not ruined it, is a civilizing agent in any community; but a tree which has been barbered and sand-papered looks as if it needed pity. Of course, conifers do often need trimming. If the base is thin and irregular, cut the top of the tree away, and let it form a more compact head. If the leader is crooked or defective cut it off, and another will start. Keep the conical shape, which is the true type of the conifer. It takes a number of years for a tree to fairly reveal itself, so let patience have her perfect work. Plant, let me advise you, a Picea amabalis, and a Librocedrus decurrens, both of them natives of this coast. Prune them as little as possible, and give them plenty of room, and after awhile their royal beauty will be a heritage of perennial pleasure.

In the flower garden there is work for the pruner. The pruning of shrubs needs much care. Too many people act as if it were the simplest of operations. They put some awkward laborer at work with a pair of garden shears, and he clips everything indiscriminately. To quote from Thos. Meehan, a vigorous writer on the subject: "Distinction should be made between those flowering shrubs that make a vigorous growth and those which grow weakly; also, between those which flower on the old wood of last year, and those which

flower on the new growth of next season, as the effect of pruning is to force a strong and vigorous growth."

This is good doctrine. If you desire an Althea or Wigelia, which blooms only on the young wood, to flower well, cut them in severely. But if you prune the Syringas and Lilacs too heavily there will be few flowers. If a shrub has grown strongly prune it only lightly, and cut the weakest shoots the most severely. This seems like a hard saying, but it is founded on sound philosophy. In the case of roses, the Noisettes, Bourbons, Teas, and Hybrid Perpetuals thrive best with a severe cutting in every autumn. It is hard to prune them too much. Annual roses, such as the White Cherokee and the Lady Banksia, require much of the last year's wood left on to make a good display.

In pruning shrubs one hint may be useful: thin out the small twigs if you wish fine flowers. Wherever you find that several branches grow from one bud or joint, cut out the weakest. Then watch, later in the season, and rub off any young sprouts which start from dormant buds in that locality. Indeed, all through the summer, superabundant shoots may be pulled off, or pinched back.

I can not leave the subject of pruning shrubs without venturing the remark that not nearly enough shrubs are planted in our gardens. They are charming in every possible location, and are hardly any trouble to take care of. Then, besides, it is easy to form a succession which will keep the garden bright every month in the year. The Japan Quinces, Altheas, Ceanothuses, Magnolias, Abutilons, Bouvardias, Camellias, Daphnes, Deutzias, Fuchsias, Hydrangeas, Hibiscuses, Crape Myrtles, Oleanders, Pomegranates, and dozens of others which I might name, may bloom, side by side, in the lovely gardens of California. Let us plant them continually, and persuade others to plant them also, so that our land will be full of bright color and of sweetest fragrance. This State of ours is a lovely heritage, if only we may plant rightly, with hope and with reverence.

Nor shall it be shrubs alone. Everywhere, in the years to come, there shall be orchards and vineyards, pleasant lawns and mellow noonday shade in gentle tracery upon the grass. This is to be a land of homes, and of many intermingled and prosperous interests. Not least among the sons of men is the faithful horticulturist, as he plants the future forests of our great valleys, and lays out the gardens to hereafter be historic. What if each one of us here today were to plant a cork oak-tree, or a date-palm, or a cinchona, or a carob? Better yet, what if we might, each one of us, plant a hundred, or a thousand? Believe me, the time is now near when a flood of immigration, of which we at present have no conception, will begin to fill our vacant acres, and clear our brush-covered hills, in the future to glow with the golden orange, and flow with wine of grape and oil of olive.

The pear trees in the old Mission garden at Santa Cruz, which were planted by the Spanish priests, many years ago, are now nearly ninety years old, and yielded an immense crop last year. They were in blossom on New-Year's day.

The Huasco raisins, which are of a beautiful color, and called the best in the world, have attracted much attention. Cuttings of the grapes from which they are made have been procured by the authorities of the University of California.

NOTES ON ORANGES AND OLIVES.

By B. B. Redding, San Francisco.

[Read before the State Horticultural Society on January 30th, 1880.]

Oranges.—I have twelve hundred orange trees planted in orchard form, at Brighton, in Sacramento County. I was induced to make the experiment of planting an orchard of oranges at this place because a record of the temperature had been kept for a number of years. I saw by comparison that while the summers were equally warm, the winters were not colder than in those parts of Italy where oranges are successfully grown for market. As for illustration, the mean temperature at Brighton for the year is 60° 48′. The mean temperature for Naples is 60° 03′, and of Lisbon 61° 04′. The mean temperature for the coldest months at Brighton is 46° 21′, for Naples 47° 04′, and Lisbon 51° 04′. Oranges are also successfully grown at Rome, where the temperature for the year is 60° 05′, and for the coldest month 45°.

The beginning of my orchard in 1873, was the purchase for a dollar of about two bushels of partially decayed oranges. These I put in a large wash tub with some water, and the oranges were thoroughly broken, and stirred with a stick until the seeds were separated from the pulp, when the pulp and water were poured off leaving the seeds in the bottom of the tub. These seeds were planted in May, in a bed of sandy loam. In four weeks the young plants made their appearance. I had lost a year experimenting before I learned, that, even in an orange sufficiently ripe for eating, but few of the seeds will sprout, while the seeds from a decaying orange will grow as readily as peas. As they are readily killed when they first appear above ground by a hot sun, I made a rough frame of sticks over which was spread branches of willow. This gave them enough sun, and some shade. By the time the leaves dropped from the willow branches, the plants were sufficiently strong to stand the sun. The second year they were transplanted into beds. The fourth year they were planted out in the orchard. The orchard is partially the red clay land of the plains, and partially the sandy loam deposited by the extreme floods of the American River. It is found that the trees planted on the red land grow more rapidly and appear more healthy and vigorous than those on the rich sandy loam of the river deposit. In 1878 the orchard was irrigated from water pumped by a hot air engine, each tree receiving water once each three weeks. Irrigation ceased on the 15th of September. The trees made rapid growth and continued to make wood and leaves until the frosty weather of winter.

On the 2d of January, 1877, at 7 o'clock A. M., the thermometer stood at 26°, or six degrees below freezing. It was probably two degrees colder during the night. During the following week there was no night it did not fall to 26°. This killed all the young wood, burst the sap vessels in the leaves, and they subsequently dropped off. The orchard looked as if it had been planted with deciduous trees. Limes went first and were killed to the ground. Lemons were more hardy than limes, but all new wood was killed. Where oranges had been budded, and these buds had sprouted, but the tree had not been cut back, the foliage of the tree afforded protection, and many sprouts from the buds were thus saved. I am convinced if I had gone in the orchard with the pruning knife, and cut away all the wood killed by the frost, many trees would have been saved. I did not then know that the sap or juices of a frost-

bitten branch of orange descend to parts below not frost-bitten, and corrupt and cause them to decay. The total loss in trees was ten per cent. I had, however, ascertained from the loss some facts, and these are, that young orange trees irrigated and kept growing until winter will lose all their leaves when the temperature falls to 60 degrees, and that ten per cent. will be killed outright; that under the same conditions this temperature will kill fifty per cent. of lemon trees, and all of the limes. The vacant places were replanted with trees from Los Angeles, and I determined thereafter to allow all new wood to harden before winter frosts should strike them. In the spring of 1879 they put on a new foliage, and by midsummer it could not have been told that they had been injured. They received their last supply of water on the 1st of August, 1879. They continued to make leaves and wood until the middle of October. By the 20th of November all the leaves were hard, and glossy green, and there were no shoots of sappy wood. I did not want a frost, but was anxious to know the effect of the stopping of irrigation at so early a period, if one did come. I did not have long to wait. On the night of December 24th, the thermometer fell to 28 degrees, on the 25th to 26 degrees, and on the 26th to 22 degrees, or ten degrees below freezing.

I did not visit the orchard until the 15th of January. As the thermometer had fallen four degrees lower than during the previous winter, I expected to find as much injury from the increased cold notwithstanding the earlier cessation of irrigation. I found that none of the wood of the oranges was frozen. Some of the outside leaves had curled and were shrunken, and a few had dropped off, but the general appearance was good. My opinion is that they are practically uninjured. The lemons have suffered more in their leaves, but no wood has been frozen. Limes have been still more injured; their leaves have turned yellow, and are dropping off, and all the late growth of wood is killed.

After the severe frost which did this injury there were two weeks of cloudy and foggy weather, and occasional showers. From my observations I have arrived at the conclusion that in those parts of the State where the thermometer occasionally falls below 28 degrees, the irrigation of orange trees should cease by August 1st, so as to give ample time for all new wood to harden; that it may fall to 22 degrees without freezing ripe wood, provided the cold weather is followed immediately by cloudy and rainy days; that it is not safe to plant lemon trees where the thermometer occasionally falls to 25 degrees; that limes lose their leaves at 30 degrees, and young wood is killed at 28 degrees; and that trees grown from seed in the local climate where the orchard is planted appear to sustain without injury three or four more degrees of cold than trees brought from a warmer climate.

Olives. — Humboldt says the olive will not suffer with the thermometer at 18 degrees, or 14 degrees below freezing; and that young wood is only killed when it falls to 14 degrees, or 18 degrees below freezing. I have young olive trees in the open ground, not more than two years old, from the seed that was forced in a propagating house, and turned out in November. They stood the late frosts without injury, not a leaf of the new wood being injured. I am satisfied that the olive will grow and thrive anywhere on the dry plains of the Sacramento Valley, from Sumner to Shasta, and on the foot-hills of the

Sierra, to an elevation of 3,000 feet, at the south end of the valley, and to an elevation of 800 or 1,000 feet at the north end of the valley. All the authorities agree that, in climates similar to that of the great valley of California, it is a hardy tree, and lives to an age that is counted by hundreds of years. Its great enemy is excess of moisture at the roots. It should not be planted on rich bottom or moist alluvial land. In rich, moist land it runs to wood and leaves, growing so continuously that it fails to produce fruit buds. In planting, I have been most successful when the young trees were placed in the dry, red plains of the Sacramento Valley, with the indurated clay, or "bed rock," within two feet of the surface. Two trees of the Mission Olive grown from layers in 1872 were planted in this land in 1873. The average annual rainfall is 18 inches. They have not been irrigated or cared for other than that the land was plowed each year. The trees commenced bearing in 1878, and bore again in 1879, yielding about a gallon of olives to each tree.

Humboldt's great work on "The Geographical Distribution of Plants," written in Latin, has never been translated and published in English. I believe there are but two copies in America—one in the Boston and the other in the Astor Library. I therefore quote from him at second hand. He noticed the fact that young olive trees never spring from the seeds that fall from the trees, even under what would seem to be the most favorable conditions, while young trees would be found growing among the rocks on an adjoining hill, or under the shade of some other tree; and he was led, by his great genius of attention to details, to investigate the subject. He found, before the olive could be made to grow from seed, it was necessary that it should pass through the digestive organs of a bird, the effect of which was to consume the oily pulp, and so soften the seed that it was prepared to grow in any favorable place where voided. This natural process for the planting of olives is imitated by removing the oily pulp and soaking the seeds twenty-four hours in strong lye, when they should be kept in a box of moist sand until the time of planting in the spring. Olives are, however, so easily propagated from cuttings that now the seed is rarely planted except to obtain new varieties.

I have ten varieties of the olive from which I am striking cuttings. When in the south of France and in Italy in 1873, I saw so many olive trees that bore fruit so much more abundantly, and appeared so much superior to the Mission Olive, that I brought back thirty-six young trees of the Picholine, or Queen's Olive, used for pickling. All of these except three were killed by the cold in passing Green River, in Wyoming, where the thermometer fell to 30 degrees below zero. The three that lived I gave to a nurseryman, who propagated from them many thousand young trees, and they have been quite extensively sold by him, and have been planted in different parts of the State. In 1877 I determined to procure the best varieties to be obtained at Aix, in the south of France. Taking advantage of my experience in losing thirty-three out of the thirty-six of the Picholine, which for two months had my personal attention, I gave exact written instructions as to the packing and shipment of this last collection. As I believe nearly all other attempts to import olive trees from France and Italy to California have resulted in failure, and as my instructions were followed

and every tree lived, it may be of interest to members of this society who wish to import to give similar instructions. The trees were not to be taken from the nursery until after winter, but quite early in the spring; all branches were to be so far cut back as to leave no leaves; the roots of each tree were to be firmly packed in a well-tied ball of moss, slightly dampened; each tree was then to be well packed in layers of straw, and all the trees firmly packed in loose straw in a thoroughly ventilated box. In this manner they came in perfect condition, and in four weeks from the time they were put in the ground crops of leaves were making their appearance. The varieties are Calliou, Ribier, Incomparable, Pandoulier, Belgantier, Languedoc, Bousserlus, Rapugnier, and Gavarri. The finest oil is said to be made from the Calliou, and it is the favorite tree in the south of France. The total cost of each tree when planted was six dollars. From these trees I have obtained this winter about eight hundred cuttings. If I succeed in striking them, it will give me pleasure to present samples of the young trees to the members of this society as the best means of securing the most wide distribution throughout the State of trees that will in the future, when our children take our places, add largely to the wealth of the State. I have also ten other young trees received from the Agricultural Department at Washington, doubtless of good varieties; but as the Department failed to preserve the names, I shall not propagate from them until they arrive in bearing, and I can compare them with known varieties and learn their names. As cuttings of the Mission Olive strike readily under glass, and as they are propagated in all ways that a tree can be grown, I would urge that the Mission Olive be planted either in orchard form or as boundary trees, in fence corners, on the poorest land, or in out-of-the-way places. Once rooted, they will live and thrive, whether cared for or neglected. After the first year they require no irrigation, and if a dry season comes they may not make much growth, but will live and wait until rain does come. If we find we have better and more prolific varieties, these trees can be readily budded with these better varieties. In six years from planting they will bear, and in eight be a small source of profit. It is true that an olive tree does not come into full bearing until it is about twenty-five years old, and this is frequently urged as a reason for neglecting to plant it. This is the reasoning of man in his savage state. He gathers the wild fruits and nuts, but never plants that others may gather. When he plants for his children, he has ceased to be a savage, and has become civilized. Fruit would be rare if those before us had not planted that we might eat. But it should be remembered that the olive once in bearing continues in bearing for hundreds of years. Small tracts of land planted in olives in France, Italy, and Spain have descended from father to sons through many generations, assuring each generation support and education, and guaranteeing exemption from want so long as the orchard is held in the family.

The importation of olive oil from France and Great Britain into this port for the year ending June 30, 1879, was 38,837 gallons, valued at $59,942, and 17,513 cases of pickled olives, of which I estimate the value at $12,580, making a total valuation of $72,522. In a few years this importation will cease, and this money will be saved to our people. In ten years, if our farmers see proper, California can supply the home demand

and export olive oil and pickled olives. The present tariff offers every inducement for the planting of these trees, as all olive oil imported into the United States must pay a duty of one dollar per gallon. The olive trees of the old missions, and the orchards planted from this stock at San Diego, Los Angeles, Santa Barbara, and San Jose, prove that our climate is favorable to the growth of this valuable tree. The oil from these trees and orchards that has come to this market during the past year is of fine flavor, of most superior quality, and of that peculiar light green color possessed only by fresh and unadulterated olive oil of the first class. I do not fear contradiction when I say that there is not a gallon of olive oil imported into San Francisco from France, Spain, and Italy that is not more or less adulterated with refined lard oil, peanut oil, or some cheaper harmless and edible ingredient. The owners of our few olive-bearing orchards have not yet learned the adulteration of olive oil, and so far California olive oil is absolutely pure.

Agassiz urged, in one of his lectures, that every man should note and make a record of all facts in nature that came within his observation. He said, that the observer might not, at the time, estimate the importance of these facts; but the day would come when they would fall into their proper places as illustrating some great principle, and they might be important links in a chain leading up to a great law regulating and controlling the universe.

The farmer or horticulturist deals directly with nature; her facts dominate, and he is taught that her laws can not be violated with impunity. He adds to the sum of human knowledge when he records his successes and failures, so that others may avoid his mistakes and profit by his experience. If my notes as an amateur horticulturist make record of any facts unknown to the veterans who have listened to me, my purpose in recording them will have been accomplished.

January 27, 1880.

ANNUAL REPORT OF THE SAN MATEO HORTICULTURAL SOCIETY.

AN INTERESTING PAPER ON PINE-APPLE CULTURE.

We are under obligations to the Secretary of the San Mateo County Horticultural Society for the following report of what that busy and hopeful association have done during the past year. That the time will soon come when every county in our State will have a similar organization is a consummation to be desired. We shall feel obliged to our friends throughout the State if they will correspond with us on the subject, giving us a report of horticultural events in their respective neighborhoods. Our San Mateo correspondent writes as follows:

The annual meeting of the San Mateo Horticultural Society was held at the Germania Hall, Redwood City, January 13, 1880. The attendance was large and everything passed off pleasantly. The following report of the proceedings for the year ending January 8, 1880, was read by the President, J. Burns:

The first meeting of the year 1879 was held January 14, when the society proceeded to elect the officers for the ensuing term. The following officers were re-elected: J. Burns, President; John McClaren, Treasurer; T. Wood, Secretary; and a committee of five, consisting of J. Fitzpatrick, John McCallum, John Burr, H. E. Holbrow, and Charles Goertz. J. Burns read a treatise on the cultivation of the mushroom. Mr. Goertz then spoke on the open air

method by which such grand results are attained in France.

The second meeting of the society was held April 8, 1879, the subject of discussion being celery growing. John McClaren read a very interesting paper on the subject, and was followed by J. McCallum, who also gave some practical hints on the cultivation of that vegetable.

The third meeting of the society for the year was held July 8, 1879. The subject of sub-tropical bedding was discussed, but owing to the earliness of the season, the matter was laid over until next meeting.

The last meeting of the year 1879 was held October 14th. This was without doubt the most successful meeting of the year. John McClaren exhibited some fine hot-house grapes, also some fine dried specimens of ferns from the Fiji Islands, which were much admired. J. Burns contributed 24 varieties of apples and pears, grown on Mr. Hayward's estate. John Burr read a good treatise on fern culture. Mr. Wood and Mr. Thompson then made some remarks on sub-tropical bedding, which were well received; as also was Mr. Wood's paper on lawn culture.

The society at the present time consists of 32 members. The finances are in a good condition, the Treasurer having $74 on hand.

The society then proceeded to elect their officers for the ensuing year, with the following result: John McClaren, President; Jerome Turner, Treasurer; John Burr, Secretary; Committee—L. Melane, James Burns, J. Thompson, T. Wood, J. Penten.

The subject for discussion—the cultivation of the pine-apple — was then taken up, when J. Burns of San Mateo read the following paper, giving the results of fifteen years' experience:

THE CULTIVATION OF THE PINE-APPLE.

GENTLEMEN: At our last meeting it was decided that pine-apple culture should be the subject for discussion at this, our annual meeting, and that I should give my experience on the subject, accompanied by Mr. Thompson. The cultivation of the pine-apple, I am sorry to say, does not get the attention it ought in this State, owing to the ready supply that can be received from southern ports and at so little cost. But what is the pine-apple exhibited in the California market compared with the good varieties that are now in cultivation? In the first place you want three houses to do them well — a fruiting house, succession house, and a house for suckers. Span-roofed houses are preferable. Bed in centre. Two flow and one return 4-inch pipe, back and front, will be quite enough piping to heat one reasonable-sized house in this climate. Also you must have pipes running through your bed, and more than two feet apart. As regards temperature, the fruiting house should be kept at about 70 degrees, or as near as possible. The succession house and sucker house not above 65 degrees—that is, by fire heat. In cloudy weather you may add five degrees to this during the day time. In bright weather you must give plenty of air, and the plants will take no harm if the thermometer touches from 90 to 100. In the summer time the bottom heat should range from 75 to 95 for fruiting plants, and from 65 to 75 for succession plants. The best material to grow them in is, I think, good turfy loam, four-fifths, and good decomposed manure, one-fifth. The suckers taken from fruiting plants are, without doubt, preferable to crowns, as they fruit so much earlier. Good strong suckers will fruit in eighteen months with ordinary treatment, and

strong healthy suckers of some varieties in a month or two less. Leaves or tan bark are very suitable articles to fill your bed with into which you should plunge your pot to within one inch of the rim. The most suitable and best varieties for summer culture are, I think, the Common Queen, Smooth Cayenne, Moscow Queen, and Baroness Rothschild. For winter culture, Monceratt and Enville will be found the most profitable. There are also several other varieties that are grown a good deal, Providence and Black Prince, for instance, but they are mostly grown for appearance sake, being large and handsome, but have no flavor to be compared with those first mentioned. Watering must also be attended to. Fruiting plants will be much better off for a little liquid manure when swelling their fruit. On no account give too much water. Be sure the plants are dry before watering.

Mr. Thompson then made some remarks on the same subject, recommending more heat than the foregoing, which he thought would give a better result.

The discussions for the next meeting are, first, hot-house grape culture, by Mr. Wood, and the wild flowers of California, by Mr. McClaren, the new President.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

A CATERPILLAR PEST IN PLACER.

EDITOR HORTICULTURIST—Dear Sir: An obnoxious caterpillar, possessed of the same unromantically ravenous appetite and in other respects similar to the one Dr. Gally so graphically describes, made its appearance in our orchard last year, devouring with equal avidity the leaves of cherry, prune, apricot, and apple trees. These caterpillars adhere so tenaciously to the under surface of its leaves that it is quite impossible to shake them off, even clinging with a desperation born of despair when held over a flame or burning coals, as we ascertained by experiment, having found it convenient to cremate a large portion of those infesting our trees. With us they are gregarious in their habits, several feasting amicably together on the same leaf. At morning and evening we found them collected in groups of twelve to fifteen on the under side of its leaves, and at those times their capture was easy and effective. They seem to prefer the foliage of young trees of the kind above mentioned, not molesting the peach trees.

MARY E. PULSIFER AMES.

Auburn, Jan. 12, 1880.

THE VEXATIONS OF FALSE LABELS.—EDITOR HORTICULTURIST—Dear Sir: I have had a rose, apparently corresponding to the one Mr. Eisen describes. Mine was labeled Elise Sauvage, *not* Eliza Savage, which is much lighter. The only catalogue giving a true description to this name is John Saul's, Washington, D. C. Its weak neck is a marked peculiarity. The whole subject of labels was, by the way, I think, settled in the Tower of Babel, and is a standing grievance with the amateur florist. I once sent to San Francisco for $20 worth of plants; $18 worth were untrue to label. I almost feel like giving the name of the firm. The named carnations, at 50 cents each, were the worst set of seedlings I ever saw, and ornamented the compost pile.

MRS. N. W. WINTON.

Santa Barbara, Jan. 18, 1880.

NEW SHASTA PLANTS. — EDITOR HORTICULTURIST:—My Shasta trip, though resulting in severe sickness, was fruitful of botanical interest. The noble forest of that region is a good study, and, though frequently visited by botanists, is still a fertile field. By chance, I rediscovered the long-lost Pinus Balfouriana, on the original locality of Jeffries, in 1852. It is the most beautiful of the pine family.

My portfolio contains a large number of Oregon plants not before known in California, and one new fern—a large, bright-colored Aspidium—which Prof. Eaton has dedicated to me.

J. G. LEMMON.

Sierra Valley, Nov. 21, 1879.

BRIEFS OF CORRESPONDENCE.

The wood of the ailanthus is strong, durable, and capable of fine polish.

We see that acetic ether is recommended as an insecticide for house plants and plants in green-houses.

A friend writes that: The way in which a man arranges the trees he plants around his house is the best possible test of his nature.

The vineyards of Malaga, Spain, covering an area of 29,660 hectares (about 74,000 acres), have been attacked by phylloxera. The pest is increasing in Geronia and Catalonia.

Every farmer we meet, these days, is beginning to be interested in grapes, and they write us many letters on the subject. Be sure the land is suitable, and be sure you have the best kinds.

W. M., Sacramento, desires to know if there is a white variety of the small Burgundy roses, better known as "button roses." There is not. We wish there was. Here is a hint to the rose-folk.

A trade is springing up between France and the Argentine Confederation in the bark of a tree called quelrado colorado, of which 25,000 tons have recently been ordered by a French firm. It is used for tanning purposes, and is said to be far superior to oak tan, as it requires but half the length of time.

A genial letter from General W. H. Noble, Bridgeport, Conn., suggests that the HORTICULTURIST might look better if our type were uniform—that is, of long primer, the size used for contributed articles, etc. But in that case we could not get in half what we want each month. As it is, much which we are anxious to print is crowded out. Help us to widen the circle of HORTICULTURIST readers, and some of these days we may increase the number of pages.

A postal from Santa Barbara, under date of Dec. 31, says: To-day we sit by an open window, the sun shining brightly, and flowers in the open air, although we have had the coldest nights within the last two weeks that I have known in this place, having lived here for nine years. My violet beds were white with frost and the fountain basin was covered with a film of ice, while, not more than a foot from that point, the heliotropes were not touched. I have cut flowers for my rooms every day, but have not had them as freely as other winters.

The last new Australian Palm, Areca Alicæ, was discovered by Walter Hill, near Trinity Bay, and has flowered and fruited in the Brisbane Botanic Gardens. Baron Von Mueller named it in honor of the late Princess Alice, Grand-Duchess of Hesse.—*Florist and Pomol.*

Editorial Department.

TREES AND TREE-SELLERS.

The creed of some would-be orchardists is short and sharp. "A tree is a tree," they remark, and they appear to live up to that comfortable doctrine. A man who will not trust his next door neighbor as far as he can see him, in a matter of purchasing a horse, who will scrutinize every point, contest every proposition, and require a guarantee bill of sale, is just the man, in cases without number, who looks at the first trees which are brought to his door at the season when he begins to talk of planting out an orchard, and examines them with the sole purpose of finding out whether they are large and well-rooted specimens. Time and time again has this sort of thing come under our notice. "A tree is a tree," you must remember.

It is necessary, in buying trees, that some sort of assurance is given to the purchaser that the goods are what they are reported to be. Although it is not likely that you will receive apple trees for pear trees, or grape vines for figs, still you may possibly get Early Harvest when you want Newtown Pippins, Mission grapes when you have ordered Black Hamburgs. Certainly there is none, unless you deal, as nearly as may be with the growers of the trees, whose reputation is involved.

Last fall, in the territory of Arizona, a vender of trees is reported by the Arizona papers as having sold fruit trees to the amount of $44,000, and he is now engaged in delivering them. They were mainly grown in the Eastern States, and were probably bought at trade sales, and at a much lower price than those charged by leading nurserymen. It might as well be understood by the tree-planters, that there are many establishments where quantity is a greater desideratum than quality; where trees are grown by the million, and are neither well-grown nor true to name. The really reputable nurserymen of the East and West are setting their faces against this evil, and the best agricultural journals are doing much to educate the public mind. A good tree, true to name, and healthy, costs hard cash to produce. It can not be sold at a low enough price to suit those tree-peddlers.

If reputable nurserymen send out agents, they are always furnished with due and unmistakable authority setting forth their calling, and making the nurseryman himself responsible for the quality of the trees delivered. Often, too, some farmer or merchant, who is well known in his community, will decide to sell trees for some nursery. By so doing, he gets his own trees cheaper, and he helps to beautify the neighborhood by persuading others also to plant trees. In such cases as this there is seldom or never any trouble, and one may buy from this local dealer with safety—always, however, asking who was the grower of the trees he purchases.

GARDENS AND PEOPLE.

Part of our work in this monthly is to consider the training and the realities of home. If we, loving horticulture in its fullest meaning, could tell you of all the gardens which ever were, both in sober history and in most imaginative romance, still, without knowing of the people who lived there, we could not fully interpret their gardens. For gardens are, in a very wonderful way, the epitome of their age. And so, indeed, are the houses in which successive generations of men and women live out

their loves, their hatreds, their abnegations, and their heroic sacrifices. That kind of ancestral pride which clings to mere accidents of titles or fortune is mournful enough; but character in one's ancestry is a greater blessing than the Lamp of Wishes, or the lapstone of Dr. Dee. If a man has reasonable evidence that his ancestors were, in the main, decent, hard-working, debt-paying, thrifty, honorable men and women, with a plenty of talent, and a few flashes of genius, why that is about the only thing (besides individual health) which ought to be of vital moment, or give rise to supreme gladness in one's own good-fortune.

The hope of the world comes back at least to the men and women, the demure school-girl maidens, and young academicians, the children building sand forts on the beach, the peach-blossom faces of little ones in their mother's arms. There is nothing done or said, thought or felt, without at least influencing humanity. You remember Carlyle says the pebble cast from your hand changes the centre of gravity of the universe. Only a little. Yes, but all it can.

These are days of complex and doubtful struggles, anxiety, and, with many, almost despair. The age lacks reverence for its earlier beliefs, and has found no sufficient prophet or leader—perhaps is not patient or wise enough to know a heaven-appointed ruler, though he stood waiting over long. Yet we are facing toward the light, and this must be our comfort. Humanity can not win peace by forgetting its attainments, by breaking its machinery, or by returning to the age of tinder-boxes, stage-coaches, and mild-mannered shepherdesses. The true faery-land is in the homes and the gardens, the roses and the children.

After all, there is nothing quite so liberal as a garden. If you run for office your fellow-men unite in mud-throwing; and to lose brings misery, to win brings envy and temptation. If you are in business, or manufactures, or practice a profession, it is still the same struggle, the same endless grind. The flow and beat of humanity is tiresome at times. But the sort of unspoken sympathy with each mood which we think we find in the garden as we plant and plan, trim, dig, and tie up plants, is certainly an endless satisfaction.

Our Grape Number.—One of the great industries of the future of California is that of grape growing. At this time everything which bears on the subject is of interest and importance. The next number of the Horticulturist will be largely devoted to the wine, raisin, and grape interests of the coast. It will be copiously illustrated with cuts procured from New York through the courtesy of the *American Wine and Grape Grower*.

January Meeting of the State Horticultural Society.—The January meeting of this society occurred just as we go to press, and a full report is impossible. We make room for two of the papers read. Besides these which we print, Mr. Blowers, of Woodland, and Dr. Strentzel, of Martinez, contributed valuable papers. The attendance was larger than ever before, and almost every member took part in the discussions which followed the reading of each paper. In the absence of Prof. Hilgard, Mr. Hatch, of Solano, presided. A committee was appointed to draft resolutions looking to the founding of a Botanic Garden in California. The finances of the society were reported to be in a healthy condition.

Editorial Notes.

Medicinal Plants in California.—When the first Americans came to these shores they found that the Spanish and Mexicans were in the habit of depending largely, in case of sickness, upon simple extracts of native shrubs, herbs, and roots. Some of the cures they performed bordered on the marvelous, and a knowledge of Yerba Santa, Yerba Sangrado, Cascara Segrada, and a number of other medicinal plants, soon extended to the Americans, and found a place in the *Materia Medica* of civilized countries. The lists of leading druggists now contain regular quotations of several species, and shipments from this coast are increasing. The business, so far, is done by contract, Eastern firms, or parties on this coast, letting contracts to persons to furnish a given amount at a fixed price, there being as yet no sale in open market for these products. The price is, contractors say, very fluctuating. Grindelia robusta grows near the coast, in blackish masses, and is not very plentiful; Grindelia squarrosa grows on the uplands and great valleys, where it is called tar-weed by some, and is troublesome in the fields. Cascara segrada grows on hill-sides and uplands, in great thickets.

Some Varieties of Clematis.—There is an enormous list of varieties of clematises, and many of them are deserving of a wide culture in this State. The large-flowered, late summer-blooming varieties belong to three sections—C. Jackmanni, C. viticella, and C. lanuginosa. The Jackmanni group have four sepaled flowers, of large size, and so make a brilliant display. Those of the viticella group are similar, but flower in larger masses. The lanuginosa group have larger flowers than either of the other species, are eight sepaled, and bloom in succession until the days of frost and falling leaves. Among the choicer varieties recommended by the *Florist and Pomologist* are C. Jackmanni and C. rubella, both of the Jackmanni type, and having rich purple flowers. C. Star of India and C. magnifica have distinct bars of lighter color down the centre of each sepal. Of paler sorts, Otto Frœbel has flowers of eight or ten inches across. The value of Clematis viticella as a climber over waste places, piles of rock, or bits of fence, is not understood as it should be. It is, if given an opportunity, a very satisfactory plant for such a purpose.

A Pansy Society.—The *Florist and Pomologist* of London reports that a Pansy Society has just been established in the west of Scotland. Its object is to promote the cultivation and exhibition of pansies in the district which has Glasgow for its centre. A committee representing about forty towns was first formed. The President is Lord Provost Collins, of Glasgow. What a fine idea this is! Good folk of the California gardens, how long, think ye, will it be before we do such things on the Pacific Coast? How shall we scatter broadcast the love and knowledge of plants and of plant culture, so that at last, in some brighter future, we too shall have Rose exhibitions, and Chrysanthemum shows, and Pansy societies? Let us be up and doing.

Coe's Golden Drop on Plum Roots.—A letter from a prominent gentleman, who is connected with the Natoma Water Co. of Folsom, says they have lately purchased a lot of Coe's Golden Drop plums to plant in their extensive orchards, and he has found considerable difficulty in obtaining them, for the company prefer them on the plum roots, as they find that the Golden Drop on peach roots does not do well under irrigation. We suggest that this is worth the attention of our nurserymen. Grow some Coe's Golden on plum stock, and advertise them.

The National Agricultural Society.—Since our last report, the National Agricultural Society has completed its organization in a convention held in New York City, on December 10th, 11th, and 12th. Lectures and addresses were delivered by Prof. Brewer of Yale, C. V. Riley, Dr. Loring, J. B. Grinnell, and others. John Merryman, of Maryland, is President, and J. H. Real, New York, Secretary. There is a vice-president from every State; General John Bidwell, of Butte, representing California. This is a wise appointment. John P. Jones, owner of silver mines, stock operator, and politician, represents the State of Nevada. Among the directors, some twenty-one in number, seven serving one year, seven two years, and seven three years, is Henry Hubbard, of San Joaquin County. The fee for annual membership is one dollar, the life membership fee is fifty dollars. A National Exhibition is under consideration. A journal of the association will be published, probably twice a year.

Now that this organization is fairly before the public, it seems proper to say that it has no light task before it. Success is, in any undertaking, only the result of long and patient labor; success in an enterprise which proposes to unite and help the agriculturists of such an empire as these United States, is not easily won. We know so few of the men connected with this movement, and so little of their aims and character, that it is impossible for us to give an authoritative opinion. Only this we must say: Real agriculturists, soil-tillers, tree-planters, wheat-growers, stock-raisers, must take hold, and must keep control. It must not become a mere gathering of politicians. That way lies annihilation. But we will hope better things for this new society. May it do good work in the wide fields before it, helping the toiler, brightening the homes of the people, making the Union of States more perfect.

Decorative Species of Asparagus.—A writer in the *Garden*, after noticing the rare beauty even of the asparagus, whose foliage is so attractive at all

stages, goes on to speak of those delicate and ornamental species which must be grown under glass, being natives of a tropical region. The hardy sorts, or garden asparagus, as well as a few of the more tender sorts, are deciduous, and have erect stems, but most of the tender South African species have slender, climbing, perennial stems, with spreading branches, forming elegant conservatory climbers. They require light, rich soil, plenty of root accommodation, and of light and air. The following varieties are recommended: A. consanguineous, a slender, scandent plant, growing 8 or 10 feet high, with handsome foliage, good for cutting, and orange-colored berries; A. Cooperi, a more robust plant than the preceding; A. plumosus has foliage which is fern-like in its delicate elegance; and A. scandens, with drooping, white flowers, and scarlet veins. All of these have the hair-like divisions, which we call leaves, but which botanists call clacodes, compressed so as to form flat branches like the yew twigs. There is also a type with the clacodes arranged in tufts like the cedar needles. Of this group are A. ramosissimus, A. falcatus, A. virgatus, A. cuspus. This last is an effective basket plant. Salvia Pitcheri, Salvia angustifolia, and Salvia azurea, are three lovely winter-blooming plants, all natives, according to the *Garden*, of Mexico. In S. Pitcheri, the flowers are about the size and form of an ordinary Lobelia, are of a rich azure hue, and are clustered upon a long stalk. In this State all three of these Salvias will succeed in the open ground, and so ought to be found in every garden.

Slugs and Pear Blight Remedy.—An article in the *American Farmer* advises the use of whale oil soap (one pound of soap to four gallons water) for slugs on pear trees; also for blight, the daily cutting away of the affected portions.

Hardiness of Japan Persimmon.—Some doubts have been expressed as to the hardiness of the Japan Persimmon. The *Gardener's Monthly* says: "While some have been easily killed by a light frost, others have never been in the least injured," and suggests that the possible explanation of the conflicting testimony about them may be that the different varieties may be of different degrees of hardiness. May it not be that the different condition of the plants themselves has much to do with it. We think there is need of investigation in regard to this matter, and that a series of careful observations in regard to the condition which best enables a plant to resist frost would be useful.

The Olive Tree—Soil and Treatment.—The olive tree does best in a heavy soil, retaining moisture well, and needs good cultivation, but does not endure irrigation. Adobe or alkali soils are not suitable. Volcanic soils, and mountain lands on a limestone or granite formation, are well adapted to the olive. The trees are hard to grow from the cutting. You must take pieces from half an inch to an inch in diameter, and a foot long. Plant them in a bed of rich, warm soil, letting the top of the cutting project half an inch. Pile up the earth around the bed, so as to make a rim, or wall, several inches high. Fill this with mulch of some kind, cut straw, leaves, chaff, or sawdust, but be sure that it is free from seed of noxious plants. Keep the ground moist. Some cuttings will start soon, but many of them will seem to be dead for many months, and then suddenly begin to grow. Do not give any of them up for several years after they were planted out. When it is desired to remove a tree, do it with great care. Trim the top, get all the sorts you can, avoid exposing the roots to the sunlight, and do not bruise them. Prepare the soil well, and move the trees as early as possible. Plant about one hundred to the acre. They will bear in five years from the cutting, and will increase in value for fifty years.

The Southern California Citrus Exhibition.—We have received an official announcement that the second annual exhibition of Citrus and semi-tropical fruits grown in California will be held in Riverside, San Bernardino County, on Tuesday and Wednesday, the 24th and 25th of February. We have not room for the full premium list. We call the attention of the orchardists of Northern and Central California to the liberal arrangements made. It is much to be desired that there be a large attendance. The Riverside people have shown commendable energy in this enterprise, and they should be supported and encouraged in all possible ways. The whole State is, or ought to be, interested in the progress of the colonies of the southern counties.

John Williamson's Fern Etchings.—As specimens of the workmanship of these plates, we have received two—one of Lygodium palmatum, the lovely climbing fern; the other of Osmunda Regalis, the royal flowering fern. It is evident enough that the work is both artistic and accurate. In these days we have learned that while, on the one hand, scientific illustrations need not be stiff and ungainly, artistic illustrations, on the other hand, need not be untrue, nor lead one astray through exaggerations and inaccuracies. These etchings belong to the better type of modern plant-pictures.

Pomological Notes.

Newcastle Oranges.—During the last days of December, and just after the Horticulturist had gone to press, there came a box to Niles—a rather inauspicious and somewhat battered box, which had come all the way from the pleasant mountain town of Newcastle, in the red foot-hills of the Placer Sierras. And when the box was opened there was therein a number of the finest oranges we have seen this year. They were grown by Silva & Son, fruit-

men and nurserymen at Newcastle, and there were no such fine oranges in market up to the date of their arrival. They were large, dark in color, rich and sweet in flavor. If Newcastle can keep this sort of thing up it will some day be famous for its oranges.

THE ORANGE PIPPIN.—Last month, while in Santa Rosa, Sonoma County, our old friend, Mr. Smythe, showed us some apples of a new kind. It is a seedling which originated in Sonoma County, and has won quite a local reputation, but has not, until this year, been sold in any nursery. It is a late keeper, and is claimed to be equal in this respect to the Yellow Newtown Pippin. It is a large and fine apple, in this respect unsurpassed. In flavor it appears to stand well in the front rank. We feel inclined to give this apple high praise as a desirable kind either for market or for family use.

PEARS WHICH RIPEN FROM JANUARY TO MARCH.—Sometime in 1878 the *Garden* had some notes and illustrations of late keeping pears. Some of the varieties mentioned are favorites on this coast, and some have not yet been introduced here. Easter Beurre, so abundant in our markets during January and February, is very large with us, and, when well ripened, of choice quality. If picked too early it exhibits gritty, hard lumps in the flesh, and is most unpalatable. Then, too, of later years the Easter Beurres have been badly specked, and do not seem as good as formerly. Beurre d' Aremburg, also known here, is somewhat larger than Flemish Beauty, handsome form, light yellow skin, rather russetty, flavor rich and flesh highly perfumed. We also have Beurre Gris de Hiver, a pear of immense size, but of only passable quality. It yields enormously, but does not stay well on the tree, and the moment the fruit is past its prime, it becomes too tasteless to be highly praised. The Easter Beurre is a much better pear either for family use or for market. Among the other winter pears of value are Josephine de Malines, a good sized, pale, salmon-colored, highly flavored variety; Zephirin Gregoire, a European variety, which is highly recommended; and Passe Colmar, of medium size, lemon-color, with a russet cheek, and rich aromatic flavor. Ne Plus Meuris ripens from February to April, and is called a most excellent pear where it is known, though it is not yet cultivated on this coast.

CELESTIA APPLE.—This is described by Dr. Warder, in his work on apples, as possessing delicious flavor, and of too delicate a texture for market. It is large, conical, somewhat uneven, with a waxen yellow skin, and a yellow, fine-grained flesh, of first quality in flavor. It originated in Miami County, Ohio. M. B. Bateham quotes in the *Practical Farmer* the opinion of R. J. Black, whom we have long known as an intelligent fruit culturist, that the Celestia is worthy of all the praise which Dr. Warder gives it; that it is difficult to say too much for it, and that it is entirely without fault.

STRAWBERRIES—CARE AND NEGLECT.—Judge Ramsdell, of Northern Michigan, says that one of his neighbors raised seven bushels of strawberries on four rods of ground (280 bushels per acre), while another had only three bushels from fourteen rods (34 bushels per acre). Both were set out at the same time, with the same variety, and treated alike, except that the first was heavily mulched with compost in the fall and again in the spring.

DATES.—There are forty-six varieties of the date tree, twenty-six of which are exhibited at the English conservatory of Kew Gardens.

THE USE OF SURPLUS APPLES.—In a recent number of the New York *Tribune*, a Michigan correspondent describes a mode by which a white and clear jelly is manufactured. The cider, the moment it comes from the press, holds in suspension a large quantity of pomace in minute particles, and unless this is removed the jelly will have a dark or brown appearance. By subjecting it to a heat high enough to make it boil rapidly, these impurities will be brought to the surface, and may be constantly skimmed off. A large, shallow wooden tank, in the bottom of which is a coil of pipe connected with a large steam boiler, is found to answer the best purpose. The tank holds several barrels, and when the steam is turned on the apple juice soon becomes a mass of foam, containing the impurities, which are skimmed off. The liquid thus becomes clear and transparent, and when cooled in jars presents a handsome appearance.

[Is it not well for our orchardists to investigate this matter, and see if they can not, by this process, find a profitable use for their small apples?—ED.]

THE ORCHARDS OF CHINA.—A great variety of trees, some of which are little known elsewhere, are to be found in the orchards of China. In addition to the peach apricot, custard apple, rose-apple, pine-apple, pear, plum, walnut, cocoa, plantain, banana, persimmon, citron, orange, lemon, quince, guava, olive, pomegranate, and vine—the last mentioned being grown in many varieties—there are the lichi (the fruit of which is of the size of a strawberry, the stone being inclosed in a soft, succulent pulp of a very delicious flavor), the lungngan, or dragon's eye; the wampu (whose fruit, about the size of a pigeon's egg, is much esteemed), and the carambolo.—*American Garden.*

ROADSIDE FRUIT CULTURE IN HANOVER.—The public roads of Hanover are nearly all planted with apple trees. The guardians of the roadsides are instructed, and take interest in their trees. They guard the fruit till ripe, when the trees are sold singly, by public auction, and the proprietor has to guard them

and take the fruit down without damaging the trees. The money goes to the improvement of the public road. These trees give shelter, ornament, and fruit. In Wurtemburg much has been done in this respect, and proposals have been made to plant the side of railways, but I do not know with what result.—*Alfred von Seefeld, in Dietetic Reformer.*

New & Desirable Plants.

[We shall glean from our exchanges and correspondence, notes on plants either new, or of promise in our climate. Our nurserymen are invited to send notes on any interesting plants received.]

New Ferns of California.—Pellæ andromedæfolia, var. rubens: Upper surface of pinnules and the involucres deep red, otherwise like the type. This beautiful variation of a well-known Californian fern has been sent to me several times by Mrs. Cooper, who has not stated the exact locality where it was found, but it was probably not far from Santa Barbara. In the dried specimens the color is a dark blood-red, but in the living plant the color must be much brighter. Young fronds of Adiantum macrophyllum and Blechnum serrulatum, and of a few other ferns, are often very prettily tinged with red. Polypodium appendiculatum of Klotzsch has the rachis and veins colored bright red; but I do not know of any other fern besides the one here described which has the whole upper surface red in the mature frond. The rachises are colored, but less vividly than the pinnules. Aspidium mohrioides, Bory, hitherto known only from Chile, Patagonia, and the neighboring islands, has been discovered near Mt. Shasta, California, by Mr. Lemmon. It belongs to the section Polystichum, having an entire orbicular indusium. The fronds are very chaffy, a span to a foot long, linear lanceolate, pinnate; the pinnæ crowded and often imbricated, pinnately lobed, the lobes crenate or crenately toothed, but never aristate or aculeate, as in A. aculeatum, munitum, acrostichoides, etc. It will be figured in the last part of the "Ferns of North America."—*Prof. D. C. Eaton, in Torrey Club Bulletin.*

Pilogyne Suavis.—This is not a new plant, but it is not yet common. It is a vine, with small, creamy-white fragrant flowers. Will not bear frost.

Reviews and Exchanges.

[All books on subjects in any way connected with horticulture will be reviewed in this department. Publishers are requested to state the price of each book sent.]

Fern Etchings.—A while ago we reviewed John Williamson's "Ferns of Kentucky," a lovely book, which we hoped would find many friends on these Pacific shores. Now there comes to us, from the same source, the new book "Fern Etchings," a handsomely bound quarto, which contains seventy original etchings and descriptive letter-press. It is a sign of hope that, in this wide and growing land of ours, there are each year more and more persons who love nature, and love art; who follow, with a deathless and tireless devotion, their chosen pursuit. There are busy merchants and mechanics whose leisure is spent in some botanical or historical or archæological pursuits. Men who hammer iron all day go home to take up the graver's tools; men who measure calicoes, or sell hardware, or weigh out sugar, make collections of illuminated missals, middle-age ballads, ancient coins, or Japanese bronzes. There are now, more than at any former period of time, many quiet people who lovingly comprehend the fullness and ecstacy of knowing how to do at least one thing well; the divine necessity, as it were, of having some secret art-chamber in one's life in which to find shelter, comfort, rest unutterable. Mr. Williamson, of Louisville, is, let us hope, but a type of a host, only one out of many who are in the heart of great cities, or alone, but not lonely in town and village, or in scantily peopled hills, or, hermit-like, in cottages on slopes of Sierras and Alleghanies. "Fern Etchings" is published by John P. Morton, Louisville, Ky., and the price is $7 50.

On the Urari, the Deadly Arrow-poison of the Macusis Indians of British Guiana. By Dr. Richard Schomburgk, Director of the Adelaide Botanic Gardens.

This is a monograph on the famous "Ourari" of Guiana. The late Sir Robert Schomburgk, the noted traveler, gave this subject his attention during his South American expeditions, and his observations were continued by his brother, who has thus been able to contribute a most interesting chapter to our knowledge of this deadly and mysterious poison which has, since the days of Raleigh, so interested the scientific world. Baron Von Humboldt gave the first authentic accounts of the preparation of this dreadful poison, but the narrations of later travelers again shrouded the subject in mystery, and it was not until the studies of the Schomburgk brothers that light was thrown on the problem. It appears that the Macusi Indians manufacture the best arrow-poison known, other tribes eagerly purchasing it in preference to using their own. It is altogether a vegetable preparation made from several species of Strychnos, the bark and roots being used, as also the fleshy root of a Cissus, and wood from a species of Xanthoxyleæ. An extract is made, and is concentrated by boiling, and by evaporation. The process occupies several days, and is accompanied with superstitious ceremonies. The resultant poison will kill a warm-blooded animal in three or four minutes. No reliable remedy is at present known. It is not a tetanic poison, but, like opium, operates by stupefying, causes palsy, and stops the voluntary movements of the muscles. It is not fatal when externally applied, but only as a blood poison. The

mechanical action of respiration is stopped. It has been successfully used by injection in cases of tetanus, or lockjaw, and also in cases of hydrophobia, so that even this dangerous agent has its value in the eyes of science.

THE RIVERSIDE PRESS.—Mr. L. M. Holt, formerly in charge of the *Southern California Horticulturist*, has gone to Riverside, and purchased the *Riverside Press*, the weekly journal of that place. We feel assured that he will make a success of his work there. Riverside is one of the very best points for orange culture on the coast, and is a most successful colony. It needs a local weekly edited by a man who is thoroughly identified with that section, and this want we expect to find fully supplied by Mr. Holt.

THE SANTA ROSA TIMES.—There is, in Santa Rosa, a chatty paper, the *Times*. Our contributor, Col. J. B. Armstrong, has purchased it, and has introduced many changes, new presses, etc. The name will hereafter be the *Santa Rosa Republican*. It shows a marked improvement in every department.

THE FLORIST AND POMOLOGIST for January. London.

The two plates for this month are, first, one of Primula sinensis purpurea punctata, a new and improved strain of this valuable decorative plant; second, of four good white hot-house grapes—Muscat of Alexandria, Foster's White, Duke of Buccleuch, and Dr. Hogg. The series of articles on grapes and grape culture, which Mr. A. F. Barron is now writing for the pages of the *Florist and Pomologist*, are of great interest. We shall next month treat our readers with copious extracts from these grape articles.

THE BOTANICAL INDEX FOR JANUARY.—This pleasant quarterly is much devoted, in the number under consideration, to annual reviews. The editor evidently loves statistics. His annual review of botanical progress is very interesting. An illustrated article on the cacti of Southern Utah introduces the reader to a curious plant world. Cereus Le Contei, the most magnificent of cactuses, grows, we are told, to a height of four feet and a diameter of twelve or sixteen inches. It resembles a stump with a rounded head, but bristles with long spines. The flowers are pale yellow.

BULLETIN OF THE TORREY BOT. CLUB FOR NOVEMBER.—The leading article in this pamphlet is on the plants found growing where foreign ships have discharged their ballast on waste lots of ground. This is a comparatively new field of investigation, and is one worth procuring. 258 species of introduced plants are reported. It will be seen that many weeds are probably introduced in this way, and we would suggest that an examination of the ballast piles in San Francisco be made.

OLD FRIENDS AND NEW. By Sarah O. Jewett.

This is one of the Little Classics of Houghton, Osgood & Co., Boston. It is a collection of stories, which have some of them appeared in the *Atlantic* and other monthlies. They are stories which it is worth while to read again for their quiet ways and their naturalness. We feel that Helen, Miss Dane, and Melissa might have really lived. "Miss Sidney's Flowers" is the story of a selfish, stately old lady, who slowly found the delight of living for others, and of making her flowers missionaries of hope and beauty.

REPORT ON THE CHACO CRANIUM.—This is a pamphlet from the Geological Survey, in charge of F. V. Hayden, and embodies the ethnographic observations of W. J. Hoffman on a cliff-dweller's cranium, which was found in Chaco Cañon, New Mexico, together with miscellaneous observations on the Indians of Nevada, California, and Arizona. There are four lithographic views of the Chaco cranium, in different positions, and illustrations of rock-cuttings, Indian implements, and ruins of ancient dwellings.

JOURNAL OF AGRICULTURE FOR JANUARY.—This is a Canadian publication, and is well conducted. We notice illustrations and descriptions of the Fameuse Sucrée, Decarie, Winter St. Lawrence, and other of the newer Canada apples.

CANADIAN HORTICULTURIST FOR JANUARY.—The present number of this neat monthly contains articles on the Niagara Grape, a new white variety; on climatic changes in Canada, and on Early Amber Sugar Cane, besides minor notes.

THE HORTICULTURAL RECORD (London).—This is a weekly, and is full of garden lore. The number before us is the last for the year 1879. The leading article is on the Hawthorn tree. The author derives the word hawthorn from the Anglo-Saxon Haege—wall or fence.

Park's *Floral Gazette* for January rocommends Dracena terminalis and D. congesta for house cultivation. They require a sunny situation, and must be potted in rich soil.

Seed Annual for 1880, D. M. Ferry & Co., Detroit, Michigan. 189 pages, two colored plates, and illuminated cover. This enterprising firm claim to print an edition of 150,000 copies of their annual. They have kindly sent us a selection of flower and vegetable seeds, which seeds we shall plant, with good intentions and due care, and hope they will grow.

Monmouth Nurseries. J. T. Lovett, Little Silver, Monmouth County, New Jersey. This is largely devoted to small fruits. Cuthbert Raspberry is a specialty.

THE GRAPE PHYLLOXERA (*Phylloxera Vestatrix.*)

[See Page 81 for description.]

Fig. 1.
[Under side of Leaf covered with Galls.]

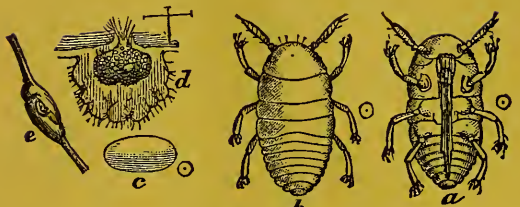

Fig. 2.
[TYPE GALLICOLA: *c*, egg; *d*, section of gall; *e*, swelling of tendril.] [NEWLY HATCHED LARVA; *a*, ventril; *b*, dorsal view.]

Fig. 3.
[MALE PHYLLOXERA; ventral view.] [MOTHER GALL-LOUSE; ventral and dorsal views.]

Fig. 4.
[TYPE RADICICOLA; showing the tubercles by which it is distinguished from *Gallicola*.]

Fig. 5.

Fig. 6.

[TYPE RADICICOLA : *a*, shows a healthy root ; *b*, one on which the lice are working, representing the knots and swellings caused by their punctures ; *c*, a root that has been deserted by them, and where the rootlets have commenced to decay ; *d*, *d*, *d*, show how the lice are found on the larger roots ; *e*, female pupa, dorsal view ; *g*, winged female dorsal view.]

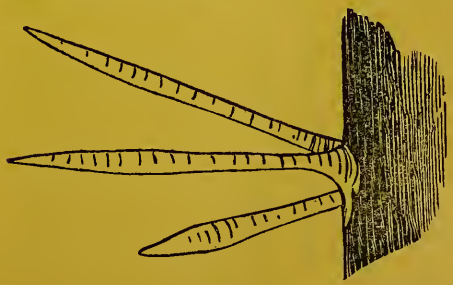

Fig. 7.

THE

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AND

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Contributed Articles.

THE RAISIN INDUSTRY AT RIVERSIDE

By HENRY J. RUDISILL, Riverside, Cal.

Grape growing in Southern California for making wine dates with the occupation of the country by the Roman Catholic Missionaries, who brought with them the variety known as the Mission, but so far as we are informed none were introduced by them for making raisins. It has been a matter of surprise to many that, coming as the old Padres did from Spain, the home of the raisin grape, they did not include it in their collection. It is probable, therefore, that the raisin as now known to commerce was not produced at that time.

The success of a few in making raisins in the northern part of the State prior to 1873, led several parties at Riverside, San Bernardino County, to purchase in the spring of that year fifty thousand cuttings of the White Muscat of Alexandria grape, with which to experiment. It was the first importation for this purpose into Southern California, and the result has fully justified the wisdom of the venture. These cuttings are distributed among our fruit-growers, and commenced fruiting moderately in 1875, but owing to a lack of experience, it was not until the year 1878 that the raisin industry became a success; and our people were fully satisfied that raisins could be produced here upon a large scale with profit.

Our success at the exhibition of the Southern California Horticultural Society at Los Angeles, in 1878 and 1879, when Riverside raisins took all the premiums — the reports from samples sent to New York, Boston, Chicago, and other large cities East, and the remunerative prices obtained, assist materially in arriving at this conclusion, while the experience of the past year confirms with certainty the peculiar fitness of the soil and climate of Riverside and vicinity for the production of raisins of the very best quality.

To make raisins of this character, it is necessary to have the soils that will produce grapes of firm texture, thin skin, small seed, rich in sugar, and a climate that during the drying season is free from rain and fog. Artificial heat in drying the grape being both inconvenient and expensive, will not produce raisins of the best quality. In Southern California the foot-hills that border either slope of the Coast Range, the elevated valleys between the Coast Range and the Sierras, as well as the western slopes of the Sierras, are un-

questionably the best localities for raisin vineyards, but comparative freedom from rain and fogs is only found, during the dry season, east of the Coast Range.

The vineyards at Riverside are located upon the mesa lands, from eighty to one hundred feet above the bed of the Santa Ana River, and about nine hundred feet above the level of the sea. They are all upon lands below the level of the irrigating canals, as climate and soils are too dry here to produce grapes without irrigation. As already stated, the variety of grape used for making raisins is the White Muscat of Alexandria. In 1877 several parties introduced the Muscatel Gordo Blanco, a grape strongly recommended by prominent fruit growers in Northern California. These vines fruited largely last year, and our most experienced fruit growers could not detect any difference between the fruit or raisin made from this variety and the White Muscat as grown here, and therefore, in future planting, our people will adhere to and recommend the latter.

Cuttings are principally used for planting in vineyard form, and in some favorable seasons a good stand can be secured, though for large plantations, on account of the expense of irrigating and cultivating, one year old rooted vines would be more satisfactory. The cuttings are prepared at the time of the annual pruning, the largest and best ripened canes being selected for the purpose. They are usually made about five buds in length, cutting the cane off square and close below the lowest bud, and leaving two to three inches of wood above the upper bud. They are then tied into bundles of fifty to one hundred and immediately heeled in until wanted for planting, care being exercised to prevent the base of the cutting from getting dry.

The ground of the vineyard is thoroughly plowed with an ordinary two horse plow, and leveled for irrigating before planting. The cuttings or vines are set in rows eight feet apart, and eight feet in the rows, giving six hundred and eighty vines to the acre. More recent experience indicates that every fourth row should be twelve to fourteen feet in width, for greater convenience in driving through the vineyard to gather the prunings, hauling manure, and providing a better space for drying the grapes.

The planting is done at any time between the first of January and first of April — the earlier the better. The ground should be first staked out, the rows running with the lines of irrigation. The holes need only be of the width of the shovel used in digging, and of sufficient length and depth to admit the cutting without bending, leaving but one bud above, and that close to the surface of the ground. The earth should then be filled in, and be firmly pressed with the foot, especially about the base of the cutting, in order to exclude the air. The neglect of this important point is the cause of many failures in planting cuttings. If the ground is not sufficiently moist, the cuttings or vines should be irrigated as soon as planted, and not be allowed to become dry. The custom adopted by some of planting cuttings with a crowbar is not to be commended even if followed at once by irrigation, as it is very difficult to compact the soil sufficiently around the base of the cutting to insure its growth.

Irrigation of the vineyard commences soon after the rains cease, water being given at intervals of three to six weeks during the months of May, June, July, and August. When the vines commence fruiting, water is usually with-

held after the fruit begins to color. Furrows are made upon each side of the rows of vines, and about eighteen inches to two feet from them, with a small plow, and the water permitted to run through these furrows for twelve to twenty-four hours, the older vines requiring the longer time. More frequent irrigation or larger quantities of water will produce larger fruit, and consequently larger clusters, but generally at the expense of the quality.

Cultivation comprises a thorough stirring and pulverization of the soil with an ordinary cultivator as soon as it is sufficiently dry after each irrigation, or until the growth of the vines prevent it, in which case the furrows used in irrigation are made and permitted to remain for the balance of the season. A deep, thorough plowing is given the vineyard in the spring, after pruning. The vines can be pruned from the time of the falling of the leaves until the first of March, after which they are liable to bleed excessively. About the best time for pruning, however, there is considerable diversity of opinion and practice. It is claimed by some that early pruning will cause the new growth to start much earlier in the season, enabling the grower to make his raisins during favorable weather, and place the new crop upon the market in time for Thanksgiving, thus commanding a higher price. On the other hand, very early pruning may induce a growth that is liable to be nipped by an untimely frost about the first of April. The safer rule is to prune from the middle of January to the latter part of February.

In pruning, the object should be to secure as soon as possible a self-supporting stock eighteen to twenty-four inches in height, from the top of which the fruiting canes are permitted to grow. This upright stock can be most readily secured by using a stake one inch square, and three feet long, which should be driven close to the stock at the first pruning after planting. To this stake tie the strongest cane of the past season's growth, cut it back to the height required, and during the following summer keep off all the growth below the three upper buds, which will appropriate the sap, and form the crown at once. From one to three canes are left upon this crown in pruning, and these are cut back to one, two, or three buds according to the strength of the stock or canes. Summer pruning is not practical to any extent as yet, and would be difficult to introduce on account of the extraordinary growth of the vine under irrigation.

So far neither disease nor insects of any kind have troubled the vineyards at Riverside, and it is claimed by the most experienced that owing to our facilities for irrigation, we shall be exempt from these troubles.

Raisin making commences usually about the middle of September, or as soon as the grapes assume a delicate amber tint, and are semi-transparent when held up to the light, for if picked before this stage the raisin is quite acid and inferior. The trays used for drying the grapes are two feet wide by three feet long, made of strips of wood one inch by three inches two feet long, upon which ordinary half-inch boards three feet in length are nailed. These trays will hold about fifteen pounds of grapes, and three pounds of grapes will make one pound of raisins. These trays are easily handled by one man in turning, which is required later in the process of drying.

The picking is done by men, women, and children, and is not laborious work. A smart boy can pick about fifty crates

per day, which at four cents per crate, the price now paid, gives a fair compensation. Two and sometimes three pickings are required, as the grapes do not ripen uniformly. The clusters are carefully handled by the stems so as to preserve the bloom, and after removing all imperfect berries, the largest and finest bunches are placed upon one tray and the inferior ones upon another. The trays are placed upon the ground between the rows of vines, or if the space is not sufficient to admit the sun and air freely, then they are moved to some open plat where these conditions can be found. They are left undisturbed for ten to twelve days according to the weather, or until the grapes become of a dark purple color; they are then turned by placing an empty crate upon a loaded one and taking hold firmly at each end. It is easily and quickly moved without disturbing the fruit or breaking the bunches. With favorable weather ten to twelve days more are sufficient to cure the grapes, which should be so dry that when pressed between the thumb and finger no juice will exude, and are translucent when held to the light. This may seem like a short time to our friends in the same industry in the northern counties, but the peculiar dryness of our atmosphere at this season and the absence of rain and fogs enables the raisin makers at Riverside to do this.

The dried grapes are now ready for the sweat boxes. These are close boxes without covers, made of inch lumber, and are usually of the same size of the trays, viz.: two feet by three feet and twelve to fourteen inches deep. The loaded trays are thoroughly fanned to remove any dust that may have settled upon the fruit, after which the sweat boxes are filled by sliding the dried grapes into them from the trays with as little disturbance to the fruit as possible. When the boxes are filled, if the fruit is overdried, which sometimes occurs, a little water can be sprinkled over it, and the boxes are then stacked away in some cool place and covered with any material that will keep out the air.

The object of this process is to secure uniformity in the color and texture of the raisin, toughen the stems, and give the grape time and favorable conditions to undergo some chemical changes that seem to be necessary to make a perfect raisin. Ordinarily two weeks are sufficient, but the raisins will keep in this condition for months.

When sufficiently cured they are carefully sorted from the sweat box into two qualities, rejecting all imperfect fruit and large stems, and are then packed into five, ten, and twenty-five pound boxes, now known to the trade as quarters, halves, and whole boxes, which are of uniform length and breadth, differing only in depth; the regulation size for a whole box being eighteen and one-half inches in length, nine inches wide, and four and three-quarter inches in depth, inside measurement.

The packing room should be large and well lighted, supplied with benches of convenient height for sorters and packers while at work, boxes for the waste, a bench with several wooden screws for pressing the raisins into the boxes, a pair of scales for weighing, and fillers. The filler is a frame of inch and a quarter lumber neatly and strongly dovetailed together, without top or bottom, and about four inches in depth, the interior dimensions being a little smaller than that of the raisin boxes. It is fitted with a rabbet to allow it to set firmly upon the box, and on the lower edge there is a slot and groove in which a movable bottom of galvanized iron, with iron handle, easily works. A

follower of inch and a half plank is made to fit neatly but not too closely in the interior of the filler. This follower is lined with tin on the under side and has across the top a piece of wood one and one-quarter by three inches, to which a small iron plate is fastened to receive the pressure of the screw.

The packer, after putting the galvanized iron bottom in place, lines it and the sides with white paper, then arranges the bunches of raisins carefully in layers until he has placed therein five pounds, as shown by the scales. He then moistens the tinned surface of the follower with a sponge to prevent its adhering, and places it upon the top of the raisins. The filler is then put under one of the screws of the pressing bench, a platform of the interior dimensions of the filler being fastened upon the bench to receive it and support the galvanized iron bottom while under pressure. The pressure is then applied by means of the screw, and allowed to remain while another filler is being prepared. This usually gives time enough for the raisins thus pressed to become so compact as to retain their form after the removal of the pressure. The pressure is now taken off, the follower removed, the paper at the sides and ends folded down over the raisins, the filler placed upon the top of the box to be filled, the iron bottom withdrawn, and the compressed mass of raisins falls neatly and compactly into the box. It requires four of these packages to fill a whole box — but in order to cover the raisins of the last package a paper with a neat blue margin is used, and upon this a handsome lithograph is placed, before the cover is nailed down. The box is then branded by the inspector with words indicating the quality of the raisin, the trade mark of the Fruit Growers' Association, the number of the producer, and it is then ready for shipment to market.

One of the difficulties met with heretofore in securing a fair and reliable price for the raisin product of this locality, was the inexperience of the producers, and consequently the diversity of treatment of the grape in its different stages of development, by the persons engaged in the raisin industry. Over one hundred fruit growers are now engaged in this business, and when it is remembered that these people are fresh from the farms and workshops of New England and the Northwestern States, where it is difficult to produce even a good native grape, it will be readily seen that there must unavoidably be considerable difference in the growth and treatment of the fruit of the foreign grape in this, the experimental period, through which we have passed.

To overcome this inexperience as soon as possible the Fruit Growers' Asssociation of Riverside was organized, an inspector of raisins appointed, a packing house established, brands and trade mark adopted. Through the influence of this association the fruit growers have adopted a more uniform system of cultivation, irrigation, picking, curing, sorting, and packing, and have made it the duty of the inspector to supervise the last four processes, so that when the product is ready for the market he can brand all raisins made by the members of the association, strictly according to quality, from his own knowledge and observation.

By adhering firmly to this system a fair degree of uniformity in the quality of the raisin can be obtained, and the purchaser will be able to rely as implicitly upon these brands, as is now done upon the brands of flour of established reputation. The title of the brand adopted by the association is for

the first quality "London Layers," and "Layers" for the second.

The fear that we could not compete successfully in the eastern markets with the cheap labor of Spain, and the high rates of trans-continental freights, has hitherto prevented many from engaging in this industry. That these fears are groundless the following facts will show.

The average yield per vine in the best vineyards of Spain is about three pounds, while here in California it ranges from twenty-one pounds from good three year old vines to fifty pounds from vines ten to twelve years old. Then the ingenuity proverbial to Americans, when brought to bear upon the systems of cultivation, and handling the fruit during the drying and packing process, enables the California grower to reduce the cost of production considerably below what it would be if the European system was strictly followed. These two points alone will, we think, more than compensate for the low-priced labor in Spain. The high rates of freight now prevailing to the Mississippi Valley, and Atlantic seaboard, are certainly to be materially reduced upon the completion of other trans-continental railroads, as well as considerably shorten the distance between Southern California and the eastern markets, thereby placing our producers upon a more equal footing in this respect with those of Europe.

The cost of ten acres of raisin vineyard at Riverside, when one hires all the labor performed, and including the cost of land, is as follows, for three years, viz:

10 acres of land at $50 per acre	$500
1st year—Cost of cutting, all labor needed and water for irrigation	250
2d year—Pruning, and all labor and water for irrigation	150
3d year— do. do.	150
Total cost	$1,050

The income from a vineyard of this age can be best shown by the statement of R. H. Henderson, one of our most successful viniculturists, as furnished by him for the *Riverside Press*.

A vineyard of two acres was planted by him early in the Spring of 1877, and one year old vines rooted in the nursery were used in planting. The crop of raisins made in 1878, twenty months after planting, was 140 boxes, sold at $1 50 per box. The crop of raisins made in 1879 was 475 boxes, sold as follows:

400 boxes London Layers at $2 per box	$800 00	
75 boxes Layers at $1 50 per box	112 50	
		$912 50
EXPENSES FOR THIS CROP.		
Boxes and Paper	$63 25	
Pruning and Watering	18 00	
Cultivation	15 00	
Picking	35 00	
Packing in boxes	40 00	171 25
Total net profit		$741 25

Or, $370 62-100 per acre.

Although this result is more than the average usually obtained, yet it is a certainty that the crop taken from a raisin vineyard the third year after planting will pay for the land and all expenses of cultivation, including interest and taxes, to that time, and leave a handsome profit. The productiveness of the vine increases with its age after the third year, therefore the owner can be assured of a permanent and increasing income.

As to the future of the raisin industry in California, and the danger of over-production feared by some, it may be well to consider the following points: The increase of population in the United States is now estimated at 1,500,000 annually, and with ordinarily prosperous times, the consumption of the raisin product must steadily increase in greater ratio than that of population. Also, that the raisin-produc-

ing section of the United States is limited to a moderate area upon the Pacific Coast. That the importations of raisins into the United States for the year ending June 30, 1877, was equivalent to 1,625,000 boxes of 20 lbs each, in addition to over seventeen million pounds of dried currants, which is also a product of the grape. To produce this quantity of raisins and currants, will require some fifteen thousand acres in raisin vineyards, and there is considerably less than one-fifth of that area now planted in this State. Is it not reasonable, therefore, to assume that for many years there will not be an over-production sufficient to reduce the income from vineyards below a reasonable profit? But, on the contrary, there is a fair probability that with our naturally rich soils, so wonderfully productive, with the skilled systems of labor which the intelligent Anglo-Saxon horticulturist will naturally bring to his aid, and with reasonable rates of transportation to the markets of the East, California may, in this industry, as in others, not only drive European competitors out of the country, but possibly compete with them in the markets of the old world.

RAISIN GRAPES IN YOLO.

By R. B. Blowers, Woodland, Cal.

A deep, rich, sandy loam, with under-soil deep and porous, and thus naturally under-drained, is the best and most desirable for raisin growing. It should combine friability as well as ability to retain moisture, for the vine should be kept in a vigorous condition, or it will not produce grapes in abundance and of sufficient size to make a desirable article for sale, as a large berry is as important in raisins as in any other choice fruit for market. The sandy loam has other desirable qualities than those named. It is a warm soil, and readily receives the heat of the sun, thus ripening the grape some days earlier than on heavy ground, giving the produce the benefit of more hot days in the first part of the drying season—an important consideration if he depends solely upon the sun heat for drying.

In our interior valleys and foot-hills, where the rainfall is limited and somewhat uncertain, early winter irrigation should be resorted to when possible; then the vine begins work under favorable conditions, and, in case a very dry season follows, the vine grower does not have to resort to the dangerous experiment of irrigating in early spring, as the vines are just coming into bloom, for if the season is not far enough advanced to have the water and earth somewhat warm, the vine becomes chilled, and the fruit is dwarfed, or partially drops from the stem. In Yolo County the best time for spring irrigation is found to be from the middle of May to the middle of June, depending on conditions of soil and season. It is also found that judicious irrigation does not retard the ripening of the Muscat family of grapes, but rather hastens it by furnishing the proper elements for a healthy growth.

In Yolo County there are many thousand acres of land suitable for raisin culture, it being a sediment deposited mostly by the waters of Cache Creek, which in the remote ages had quite a roaming disposition, as indicated by the slightly elevated ridges running through the central portion of the valley, in the centre of which, although mostly covered with loam, are gravel beds of about the width of the present Cache Creek. In these gravel beds the water is found at a depth of from 10 to 20 feet from the surface of the ground,

except when the water is high in the present stream; then it is found to rise in the old beds. Our best fruit lands are on the slopes of the ridges on each side of the gravel beds, giving of choice land a mile or more in width, the intervening lands being choice for farming, but somewhat too heavy for the best grapes.

In planting vines, there should be given plenty of room. It is a poor economy that puts too many vines on an acre. I like eight by ten feet apart, the wide way the longest, giving the advantage of cultivating with double team one way with larger and better improvements. Then for many years the vine roots are seeking new soil, and they can have vigor enough to mature a large crop. I think more pounds can be grown on a given piece of land in fifteen years, and assuredly of better quality, than if the vines are more closely planted, and the cultivation is also much easier. If the grower desires to dry by sun heat, the grapes can be picked on trays and dried between the rows, thus saving extra work in hauling and handling.

We do not often use the plow among vines. We use, first, the diamond-toothed cultivator, after having crossed the ground two or three times, each time going some deeper. We use a long-toothed cultivator, thus thoroughly pulverizing the ground to the depth of six or seven inches, winding up late in the spring or summer with a long-bladed weed-cutter. Our lands are supposed to be able to produce, for years in succession, either of the Muscatel or Seedless Sultana, two hundred twenty-pound boxes of raisins per acre. Of course this requires high cultivation.

Shipping grapes are worthy of consideration, as our better qualities are being now carried to all parts of America in good order. All we need to make it remunerative to the grower is a fast freight line of eight to ten days schedule time to New York, with rates reasonable. Such time would take much of our fruits East in good order, and add to the general welfare. Even now, with high rates, many hundred tons are shipped out of our State by one enterprising firm of Sacramento, who pay annually nearly one hundred thousand dollars freight to the railroad companies.

GRAPE CULTURE IN TUOLUMNE.

By JOHN TAYLOR, Tuolumne County.

A few items for your excellent journal on "Grape Culture," from Tuolumne County, may be of interest to the many readers of the HORTICULTURIST both at home and abroad. The question may be asked, "Is this county adapted to the extensive cultivation of the grape for wine making, raisins, etc., and for table use? Is the climate and soil suitable for cultivating these varieties?" Our experience would say that no other county in the State can produce a better grape, or is freer from obstacles to success. Our climate is noted for its purity; especially is this manifest when raisin drying commences. Health is everywhere apparent; invalids seek our pure mountain atmosphere from the fogs of the coast counties. All varieties of fruits flourish in this county, with very little attention or scientific care. In fact the horticulturists of this county are amateurs, learning by the experience of past years, and not by training as in other countries. Grapes have not received that attention which they deserve, owing to the distance of a general market and the lack of railroad transportation. But what has been done shows the

capabilities of the county for the production of all varieties of grapes of the very first quality, without any apparent drawback to a permanent success. The soil is varied, according to location. Those valleys having soil from the wash of the Table Mountain are peculiarly adapted to vine growing. The fine orchards of James Goodwin, Beckwith, Quinn, and Blackburn, are at the base of this famed table land. The rock is of an iron nature, and very heavy. No other part of the county is famed for the excellence and abundant fields as are these lands. The grapes raised on Goodwin's and Quinn's place have been on exhibition for a number of years at the State Fair, and created quite a sensation and inquiry as to location and treatment. The market of San Francisco has been supplied with its choicest fruits from some of the gardens named.

We have a climate peculiarly adapted to the successful cultivation of all varieties of grapes. A bright, dry atmosphere for drying raisins. Soil, second to none. Valleys unimproved, which might supply homes for hundreds of honest and capable men and their families. It only requires some of the cultivators of the vine from sunny France to infuse a live element into this neglected industry. Europe seems to be on a retrograde movement, as to the grape and wine business, while here all the requisites for success lie within our reach, with a very small capital to begin upon, and a bright prospect for the future.

I must make mention of Mr. Jarvis, of "Gold Springs," as being the owner of the largest raisin vineyard in the county. Mr. Jarvis has long been a successful orchardist, having a splendid water privilege from large springs. The raisins cured on Mr. Jarvis' garden are very superior, and meet with a ready sale.

J. Winchester is also an intelligent amateur in grape culture. Especially is he successful with the Malaga variety, having a small field with vines, some three or four years old, which will bear heavily this season. He is also experimenting with other varieties.

John Preiria, of Jamestown, has one of the largest vineyards in the county for wine making, exporting large quantities to the Eastern States; and he keeps three or four wagons constantly running, supplying wines, fruit, and vegetables throughout a wide range of country, including Bodie. This article will not allow of an extended notice of all worthy vineyardists. But I would say to those about to enter upon the cultivation of the grape, to visit the foot-hill region, the tropical belt of California, there to find all the conditions necessary for a successful enterprise. Their life will become a blessing, and a pleasure, in the clear and bracing atmosphere, and by the sparkling streams. "A home, and good health," are the grand requisites to make life worth living for. Here we can rest secure under our own vine and fig-trees.

Plant raisin grapes eight feet apart each way.

The Kimball Brothers, of San Diego, made the first raisins of that county.

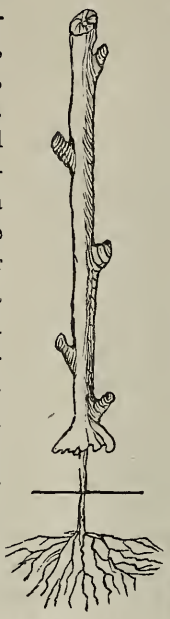
Table grapes, grown out of doors, were shipped from Brown's Valley, Napa county, until New-Year's day, this year.

Table grapes of value are the Black Hamburg, White Chasselas, Early Sweetwater, Muscat of Alexandria, Rose de Peru, and Emperor.

RESULTS OF GRAFTING EXOTIC VINES ON NATIVE SPECIES.

By JOHN ELLIS, University of California.

It is a very general and common practice with horticulturists and others to state in the various periodicals what their intentions to accomplish are, but very seldom, indeed, do they give their results. Try experiments first and then be sure to give results afterward. It is an old saying "Every one must pay for his or her own experience," but a great deal could be saved in money and time if people would give their experience to the public and not their *ipse dixits*. Some party may retort by saying, "Why don't this writer set the example?" We answer that we have always endeavored to do so, and so long as I live and am able I shall so continue, whenever I see the likelihood of a community falling into a great mistake. Grafting the exotic vine on the native grape is a very pretty theory, but what will be the result? I will give you my experience of some twenty-two years ago.



Muscat Vine grafted on a Native.

At the time mentioned, I was perhaps the largest grower of vines under glass in the State of New York for market purposes, having then a house of two hundred feet in length of Muscat of Alexandria, and finding some difficulty with the bunches "setting," as the gardeners call it, I conceived the idea that perhaps this difficulty might probably arise from the fact of these vines being early worked (grown out of season), and that their roots not growing in a temperature equal to the foliage, might possibly produce a check in the circulation of the sap, and result in the fact of imperfect fertilization. That the roots in the border were not growing in the same temperature as the wood and leaves, I very well knew, although all was done that was possible to effect this desired mean of temperature with the means at our command, and hence the splendid idea struck my mind of grafting on *vitis labrusca!* I went to work at once and grafted White Muscats on our native labruscas; the cut here given will show the result of the working. In the first place, the scion, or graft, must be above the ground line, or the graft will strike root and get into the soil, and the object in grafting becomes ineffective. In the second place, it will be found that the stock of the native vine (*cordata*) will not grow, and swell in its diametrical proportions to anything like the proportions of a Muscat, and hence will not yield the amount of sap that the Muscat requires for a full, continuous growth, and consequently will not pay the grower to adopt, or continue the system. This statement is our experience, and so the advice we offer is—Try experiment on a small scale before planting a large vineyard.

As to phylloxera, we are strongly of the opinion that the cause rests in the lack of some constituent element in the soil. Let us go to work and repeatedly analyze the soils of the phylloxera districts, and when that is completed, go into districts and analyze soils where no phylloxera are found. We should not fully accept the practices of Europe, but should rather work out our own salvation.

From 48 acres of vines in Sonoma County, 25,000 gallons of merchantable wine was made this last season.

EISEN VINEYARD NOTES.

By Gustaf Eisen, Fresno County, California.

My promise to write you an article for your "grape number," I will try to fulfill, but fear that both you and the readers of the Horticulturist will be only poorly benefitted by what I can have to tell. I have no intention of speaking of all the vineyards in the county, but will confine myself to this one, and to the following points: Acreage, soil, climate, situation, etc.; culture; harvest and vintage; diseases and enemies, and treat of each successively.

Acreage, Soil, Climate, Situation, etc.—The Eisen Vineyard is situated on the level plain of Fresno County, about 12 miles from King's River, where it emerges from the foot-hills, and about 15 miles from the Sierra Nevada foot-hills. The elevation above the sea is about 279 feet, and the highest point of the Sierra Nevada which can be seen from the vineyard is Mount Kaweah, which can not be much less than 15,000 feet. This high Sierra is, however, too distant to seriously affect the climate, as late spring frosts are only apt to occur when the lower foot-hills are covered with snow, after a heavy rain-storm in April. Such late frosts have, however, not occurred for the last three years. The mean temperature is not known, but during the hottest months of the year the thermometer reaches generally 100 degrees—often even 110, and sometimes even 118, the warmest I ever experienced here. During the nights the temperature falls as low as 70 degrees Fahr. The prevailing winds come during day and night from the northwest; during the night they are deliciously cooling—during the day, if not passing through trees or hedges as wind-breaks, or over green alfalfa fields, they are scorching hot, and oftentimes burning the young grapes if unprotected by sufficient foliage. The Flame Tokay Grape, and also the Black Hamburg, are especially apt to be burnt. The wind also has another bad effect—it sweeps the vine branches all toward the southwest, thus exposing the northwest side of the vine to wind and sun. It has, however, one good effect, which balances all the bad ones—it prevents mildew on the vine. During the summer we have no fogs, and very little, if any, dew. The soil of the vineyard consists of a heavy, reddish, sandy loam, which, when properly moist, is beautifully friable, but when dry can be hard as rock. The vines are all grown by irrigation. The age of the vineyard is six years. The acreage is 150 acres, of which 100 only are in full bearing.

Culture.—The old part of the vineyard was started from rooted vines, but afterward only cuttings have been planted, and always directly on the spot where they are to remain. The best time to plant cuttings is February and March—the longer the cuttings the better—and the best way to plant them is to dig a hole and plant the cuttings say three feet deep. But this way is too expensive, and I have found that the most practical and cheapest way is to plant with a crowbar, having a cutting from 14 to 18 inches long, leaving two or even one eye above the ground. Care must be taken that the hole round the cutting is well filled with soil, as a space round the butt end of the cutting will cause it to mould and die. The land should be well plowed and irrigated before the cuttings are planted, and afterward kept continuously moist by irrigation. It is necessary to have the land perfectly level, and divided in tables, surrounded by banks or cheeks

of dirt. The most convenient size of such a table is, for our locality and situation, 3½ acres, but most of the people here make them much smaller. All depends upon the water at your command. When the plants are small they need to be flooded five to six times a year, but when three to four years old one submersion during February is sufficient for the whole year. The distance of the vines is 8x8 feet, but heavy growing varieties could with advantage be planted 9x9 or 10x10. The pruning is performed twice, and sometimes three times a year. The first, or general pruning, is done from January to March; then the greatest part of the wood is removed, but the canes containing the fruit buds are not touched, or only slightly shortened in. I do this on account of the late frosts in April. If the canes are sufficiently long, only the exterior eyes will start, and consequently be nipped by the frost, thus leaving the principal eyes unharmed. In April, after all danger of frost is over, the fruit canes are shortened in to two or three eyes, as may be required; the bleeding does not hurt the vine. The third, or summer pruning, is only required when constant winds from one direction expose one side of the vine. The long canes must then be shortened somewhat, so as to cause laterals to issue and cover the vine. Summer pruning should never be done later than the beginning of June, as it is injurious to the color, flavor, and size of the grapes. The leaves are the stomach of the vine —if they are hurt, the plant can not digest its food. The vines are not trained to wires nor staked, but pruned to the standard of a foot or so. After pruning, the vineyard is plowed, the dirt or soil being always thrown from the vines. I begin in the middle of the row, with a double plow and two horses, and finish up close to the vines with a single plow and one horse. The single-trees should be very short, and not furnished with nipples at the ends, as they are apt to catch the vines; a folded leather strap on both ends is all that is needed. After plowing, the land should be cultivated repeatedly both ways; this will at the end of the summer make the land level again. Some parts of the vineyard I cultivated last summer as many as eighteen times, and none too much. The cultivator should be four feet and two inches broad behind, and here furnished with a horizontal knife from beam to beam. This knife should be on a level with the middle of the diamond point, and will, if properly filed, take all the weeds in its path, and save both labor and time. A plowing of four inches seems to me sufficient. Harrowing or rolling the land I have not deemed necessary. After the middle of April, the vines are generally so advanced that only the cultivator can be used.

Harvest and Vintage.—The principal grapes we grow are Zinfindel, Malvoisie, Riesling, Chasselas, Malaga, and Muscat of Alexandria, and the Gordo Blanco. The Zinfindel makes the best claret, and Muscat of Alexandria the best raisins. The Gordo Blanco ripens later than the Alexandria, and its berries are neither so large nor so finely formed as the Alexandria. The oblong raisins of the Alexandria are, in my opinion, far superior in every way to the round ones of Gordo Blanco. As a table grape the Malaga is the best; its yield is large, and its keeping qualities good—yes, excellent. But, besides these varieties, I have a colony of grape-vines, when I as yet have collected about 120 varieties, both foreign and native, with the object in view to finally find out which variety is the

best for our locality. I have also somewhat experimented with the native Æstivalis varieties, as they are absolutely phylloxera proof. It has not yet made its appearance here, but if it does, we hope that irrigation will destroy it.

The first grapes are generally picked in the middle of July, once as early as the 4th of July. The general crop can be gathered in the middle or end of August, but the grapes hang yet on the vines at Christmas time—then, however, somewhat damaged by rain and frost, which latter generally sets in in the middle of December, or even earlier. The average yield last year was thirty-five pounds to the vine, but many vines had 50 to 100 to each. Some Chasselas had, when two years old, as many as 75 or 100 pounds to the vine.

Diseases and Enemies.—The vines being all young, have so far been exempt from all disease. A few dozen vines nearest the creek on a shaded place were last year found mildewed, but wherever the hot winds sweep, this disease does not spread. The enemies of the vines are the hares, the grapevine moth, and the grape fly (thrips). The hares finished the first year ten acres of young vines, but a dozen greyhounds and pointers now make the hares rather scarce. The grape moth (a large sphinx) made one year a terrible onslaught on the growing branches, but we had fifteen men picking for three weeks, and succeeded in collecting somewhere near twenty tons of large caterpillars. They never returned. The grape fly or thrips caused some damage to the leaves of the vines last year, preventing some varieties from ripening. For them I know no remedy, but hope they will find it tiresome and lonely, and leave. At least I have heard that they have done so on other places where their visits were not wanted.

WHERE THE BEST OLIVES ARE GROWN.

By Agapius Honcharenko, Alameda County.

It is said that the olive-tree was brought from heaven by Minerva, and planted in the Acropolis, as a blessing from the gods for mortals. From that place the olive was multiplied through the valley of Attica, and over the vales and rocky slopes of the Grecian peninsula. It does not succeed in a very hot or a very cold place. Only civilized people use it, and, since Californians are becoming civilized, now is the time to plant trees of the olive. The climate of California, in the hilly portions, is much similar to that of the Peloponesus, Cephalonia, Corfu, the peninsula of Italy, Spain, and those countries near the Mediterranean, which produce the finest oil. The finest oil does not come from the semi-tropic regions; the oil of Jaffa and Mount Olivet is not as good as that raised in the Anti-Libanus districts; in Cyprus, also, the oil is very inferior. Crete produces large olives, which are very good for eating, but they do not make as good oil as do the Attica olives. The oil of the Peloponesus is fine, and so is that of Lucca. In Macedonia the olives are large and good for eating, but the oil is poor.

I hope to live to see some of our enterprising nurserymen import some olive trees from the foot of Mt. Parnassus. The olives which grow there are lemon color when ripe, and of fine quality. Indeed, many persons in that region make their dinner on bread, olives, cheese and wine, and they are healthy, strong, and able to perform very hard work.

The pumace which accumulates around wine cellars during the crushing season, and the lees from the fermenting vats, are the most valuable of manures for the vine.

ADVENTURES IN THE BUSH.

By Mrs. C. L. Bracey, New Zealand.

We had just finished breakfast, when a young friend staying with me proposed that we should one day drive to a forest four miles distant and make some collections of mosses and ferns. I willingly acceded to her request. The pony carriage was quickly prepared, and we started; Tommie, my pet dog, jumping up in the pony's face and barking with delight, for above all things he enjoyed a run by the side of Punch, the pony. It was rather a breezy morning, but we soon reached our destination, and putting the pony up at one of the stables, we proceeded to the forest, taking our kits for the expected treasures.

As we entered the bush, large bushes of Solanum laciniatum, covered with their pretty bluish flowers in many flowered cymes, and with green berries hereafter to ripen to an orange color, stood thickly together; further in the bush tree ferns raised their delicate fronds, and above them were tall, upright trees covered with a luxuriant growth of Fleycinetia Banksii, climbing up the trunks to the topmost branches of the trees, their leaves grass-like, notched at the edges, the fruit not fully developed, but it is borne in clusters of two or three, and when ripe, the thick, white fleshy inner leaves are nice eating. Lovely trailing vines of Clematis indivisa twined about the trees and low bushes. The Rubus cissoides embraced others. This Rubus is almost destitute of leaves, but is formed of numberless thin stems, branching in all directions, and covered with sharp, hooked thorns, and when caught by these stems, the best plan is to cut off the piece and disentangle it at your leisure, or more stems catch you, and the wounds from the thorns leave a painful reminder behind them. As we proceeded, lofty Podocarpus trees surrounded with a carpet of ferns. There were Asplenums, Adiantums, Lygodium articulatum, and many others, close by a fallen tree partly decayed, and with its trunk covered with beautiful mosses of different varieties, some emerald green, others so pale that they looked almost white; some resembled minute trees, others a club moss, and mingled with them were Hymenophyllums and low creeping ferns, each a gem in itself.

Perhaps all my readers may not be aware that in these favored islands we have no snakes, or venomous reptiles, or these densely overgrown forests would be unsafe to visit. We see sometimes a delicate green or brown lizard, some pretty green spiders, and one brown spider, which has a large white spot on his back. I have heard that one is of a poisonous kind, but I have never seen it. We have few butterflies compared with other countries, but many beetles, cicalas, and a green and brown mantis, and various other insects. The mantis has just brought itself to my recollection by its presence upon the foliage of a Coprosma lucida which is growing near. This very ornamental shrub, or small tree, has glossy leaves three to six inches long, oblong, or lanceolate; the flowers are small, greenish in color, crowded in threes or more together, and sweet-scented; the berries when ripe are red, small, and sweet-tasted. Close by several plants of the Arthropodium cirrhatum, our New Zealand lily, were in blossom. This plant has narrow leaves, and delicate white flowers, racemed on a long stalk. It is very pretty, and thrives in gardens nearly as well as in its native habitat. Small trees of Schefflera digitata, covered with bunches of

black berries in clusters, like our elderberries, but with bright glossy digitated leaves, seven to eleven foliolate. The flowers are small, and green in hue. The juice pressed from the berries can be used as an ink. This forest proves rich in trees of Metrosideros robusta, and of Santalum Cunninghamii, both excellent woods, and largely consumed, among other purposes, for fire wood. Trees of Myoporum lætum, the leaves curiously dotted with oil glands, flowers white, half an inch broad, two to four together, are found here. The berries are small, a delicate mauve color, semi-transparent, and possess an insipid taste. The young trees grow very quickly, and form a good shelter hedge when small. It prefers the sea coast, but is abundant in the forests of this locality. Here are several Melicytus ramiflorus, the flowers of which tree are small, in fascicles on the branches. All those within reach of the cattle had been eaten, as they are especially fond of the foliage. The wood is of no value.

As we advanced further we found more mosses; a few Viola filicaulis, with small pale blue flowers; Oxalis corniculata, with its small yellow flowers; and some large vines of Convolvulus sepium. I now first observed that we had lost all cattle tracks, so thought we had better go back. We returned, as we supposed by the same tracks, and after walking for about half an hour, came to several trees of Lauretea Novæ Zealandiæ, called by the natives Pukatea. It was sometimes used for canoes, being soft, and yet durable, but Totara was the wood chiefly prized, as it is so lasting, and Kauri wood was also much estimated. This latter wood is known botanically as Dammara Australis. The Lauretea Novæ Zealandiæ has a curious kind of buttressed trunk. It is often 150 feet high, and 7 feet in diameter. The flowers are in axillary racemes, silky, about one-fourth of an inch in diameter.

I now discovered that we had mistaken our path, and knew that we should find some trouble in getting out of this forest, so we sat down a few minutes to consider the best way of attaining our wishes. The sun had declined below the tree tops, so it could be no guide to us, but I thought that if we could but find fresh cattle tracks they would probably lead us out of the bush, for I knew that the people living in the township let their cows graze in this forest, so we again started to walk. We went on for at least half an hour, almost too anxious to remark the beauties that surrounded us, but no tracks did we see. Presently I heard Tommie barking, so fancied he had come upon some cattle. We then turned off going in another direction toward him, and found him barking at something on the ground. On examining this, it proved to be a cow bell, and further on were fresh tracks of cattle's feet, and a piece of rope which had held the bell on the cow's neck, the sound of this bell enabling her owner to find her. For nearly an hour we followed these tracks, and at last came to a hut made of and thatched with bark. We cooed (called) and a man came up close by, so we told him of our dilemma, and he promised to show us a way out to the high road. We were already so tired that we were glad to rest on some of the large fallen trees, for two men were here engaged splitting timber for rails, and other purposes, and a dray track was cut to bring out the timber.

We now quickly started, and after a walk of about half a mile reached the high road, and a short time after the town, where we heard two men only a few weeks before had been lost for four

days in this very bush. Most thankful did we feel that we had so easily got over our difficulty. The pony carriage was ready, and we soon were on our way home. The breeze of the morning had changed to a high wind, and red and dark gray clouds were chasing each other quickly over the sky, as the sun dropped below the horizon. We indeed felt glad that we were at home instead of passing a night foodless and shelterless in this wild forest. We had made a fine collection of mosses and ferns, and certainly had received a faint idea of what it might be to be "Lost in the Bush."

THE CASIMIROA EDULIS.

By H. C. Ford, Santa Barbara, Cal.

In the grounds once belonging to the old Mission Garden in Santa Barbara is a tree about two feet in the diameter of the trunk, with sturdy, upright branches, forming a beautiful head of dark green leaves. Another tree of the same species is growing in the garden of the Park Hotel. The former was planted over eighty years ago, as near as can be ascertained, and the latter came from a seed received from Mexico, and planted about twenty-five years ago. These trees have long excited the interest of local botanists, and as the scientific name could not be determined here, I sent specimens of the small branches with leaves, flowers, and half-formed fruit, to Prof. Sereno Watson, of Harvard University, and in return received the following information:

"Your tree is the Casimiroa edulis, growing wild and cultivated in the States of Sinaloa, Durango, and elsewhere in Mexico, and known by the name of Zapote blanco. It belongs to the Rutaceous family, and is more nearly related to the orange than any other American plant."

Our Spanish fellow-citizens also know it under the name of Zapote. Its leaves are palmate, three to five-parted, and glistening in the sun; flowers small, greenish-yellow, growing in clusters on short peduncles on the old wood. The tree is in flower during December and January, the fruit maturing in March and April. It is about an inch in diameter, pale yellow in color, and like many other sub-tropical fruits, is most palatable when near decay. It has a very rich sub-acid taste, and our native Californians are very fond of it. The older tree is about twenty-five feet high, and about the same in the spread of its branches. The younger is near twenty feet in height, and both form fine heads of dense foliage, and it seems to be very desirable as an ornamental tree for street or other planting, as it is perfectly healthy and hardy; in fact, it seems perfectly at home in Santa Barbara, and I have no doubt would thrive throughout Central and Southern California. The efforts to propagate it by cuttings have not been thus far successful, and I presume the proper method would be to plant the seed; but as the trees now here were raised from seed obtained in Mexico, it is possible that our climate will not perfect it sufficiently to germinate.

Black Bishop grapes are a favorite in Fresno County.

Orange and lemon trees have succeeded well in Butte county.

Prospects for good crops were never better on the Pacific slope than they are this season.

Oranges, clingstone peaches, olives, grapes for raisins, and grapes for wine, have been planted extensively this winter in this State.

THE LAND OF GLADNESS.

By Charles H. Shinn.

Dear is the redwood shade, the rest it brings,
Where fancies rise as crystal mountain springs
Beneath tall trees; and dear each bird that sings
In rainless summers; and the ferns which grow
By cool Novarro, where glad breezes blow,
And white azaleas touch the river's flow.

And there are cliffs, on this wild western shore,
With hidden caves, and sea-weed on the floor,
And living shells, and many a marvel more.
There the sea whispers of the days of old—
Go thou and wait, and hear the story told,
When storms are loose, in voices manifold.

Here are gray mountains, wonderfully clad
With gleaming snow; vast peaks forever glad—
Such heights as these the elder singers had.
Oft have I seen the sunlight break in foam
On Lassen's peaks, and Shasta's snowy dome,
Where lilies bloom beneath the glacier's home.

How softly flow, among Nevada's hills,
The ice-cold springs, the careless, childish rills
In woods of pine, my wandering fancy thrills,
And, even in the city's noisy walls,
I hear the chant of endless waterfalls,
And through the cedar boughs the bluejay calls.

San Francisco, Feb. 15.

THE GRAPE PHYLLOXERA.

(*Phylloxera Vastatrix.*)

We give the natural history of this destructive insect, which has wrought such wide-spread desolation in the French vineyards, drawn almost wholly from the entomological reports of Prof. C. V. Riley, of St. Louis, Mo., to whom we are indebted for nearly all that is known concerning its history in this country, and who was the first to establish the identity of our Leaf-gall Louse with the root-inhabiting type. Prof. Riley's conclusions have been confirmed by Prof. Planchon, Dr. Sigornet, and other French and German scientists. We limit ourselves in this chapter to the natural history of the insect, reserving for a future occasion a discussion of other correlative facts. In the illustrations [see frontispiece] it must be borne in mind that the figures (except the leaf) are highly magnified, and that the natural sizes are indicated by the dots within circles or by lines.

The leaf-cut (Fig. 1) shows the galls or excrescences produced by the gall-louse. On carefully opening one of the galls we find the mother-louse diligently at work, surrounding herself with pale yellow eggs, scarcely the hundredth (.01) part of an inch long, and not quite half as thick. She is about four one hundredths (.04) of an inch long, of a full orange color, and looks not unlike an immature seed of the common purslane. The eggs begin to hatch, when six or eight days old, into active little beings, which differ from their mother in their brighter yellow color, more perfect legs, etc. Issuing from the mouth of the gall, these young lice scatter over the vine, most of them finding their way to the tender terminal leaves, and commence pumping up and appropriating the sap, forming galls, and depositing eggs as their immediate parent had done before. This process continues through the summer, until the fifth or sixth generation. Every egg brings a fertile female, which soon becomes wonderfully prolific. By the end of September the galls are mostly deserted, and those which are left are mostly infested with mildew, and eventually turn brown and decay. The young lice attach themselves to the root, and thus hibernate.

It is an important fact that the gall-inhabiting insect occurs only as an agamic and apterous female form. It is but a transient summer state, not at all essential to the perpetuation of the species, and does, compared with the root-inhabiting type, but trifling damage.

The root-inhabiting type of the grape

phylloxera hibernates mostly as a young larva, attached to the roots, and so deepened in color, as generally to be of a dull brassy brown, and therefore with difficulty perceived, as the roots are often of the same color. With the renewal of vine growth in the spring, this larva moults, rapidly increases in size, and soon commences laying eggs. These eggs, in due time, give birth to young, which soon become virginal egg-laying mothers, like the others, and, like them, always remain wingless. Five or six generations of these egg-bearing mothers follow each other, when about the middle of July, in the latitude of St. Louis, some of the individuals begin to acquire wings, and continue to issue from the ground until vine-growth ceases in the fall. Having issued from the ground while in the pupa state, they rise in the air and spread to new vineyards, where they deliver themselves of their issue, in the form of eggs, and then perish. In the course of a fortnight these eggs, which are probably deposited in the crevices on the surface of the ground, near the base of the vine, produce the several individuals which are born for no other purpose than the reproduction of the kind, and are without means of flight or of taking food.

Every piece of root having rootlets taken from an infected vine in August or September, will present a goodly number of pupæ, and a glass jar filled with such roots and tightly closed, will furnish daily, for some time, a dozen or more winged females, which gather on the side of the jar towards the light. We may gather some idea from this fact of the immense number that disperse through the air to new fields, from a single acre of infected vines in the course of the late summer and fall months. We have, therefore, the spectacle of an underground insect possessing the power of continued existence, even when confined to its subterranean retreats. It spreads, in the wingless state, from vine to vine, and from vineyard to vineyard, where these are adjacent, either through passages in the ground itself, or over the surface; at the same time it is able, in the winged condition, to migrate to much more distant points.

If to the above account we add that, occasionally, individuals, under certain conditions, abandon their normal underground habit, and form galls upon the leaves of certain varieties of grape-vines, we have, in a general way, the history of the species.

Figure five shows the vine-root in its normal condition, with its myriads of little rootlets reaching out in every direction, as they appear before attacked by the phylloxera.

Figure six shows the abnormal swelling of the rootlets which follows the puncture of the root-louse; they eventually rot, and the lice forsake them and betake themselves to fresh ones. As these decompose, the lice congregate in the upper parts beyond, until at last the root-system literally wastes away. It makes repeated efforts to recover, and throws out numerous new roots, but these in turn are attacked, and thus the vine finally perishes altogether.

Figure seven shows a section of root with the young growth pushing out in the shape of sharp spurs.

During the first year of attack there are scarcely any outward manifestations of the disease; only the second and third year—when the fibrous roots have vanished, and the lice have not only destroyed all the new formations, but settle on the larger roots—do the outward symptoms of the disease become manifest, in a sickly yellowish appear-

ance of the leaf, and a reduced growth of cane; and the vine dies. When the vine is about dying, it is generally impossible to discover the cause of the death, the lice having previously left for new pasturage. — *Condensed from Wine and Grape Grower.*

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

SUITABLE AND UNSUITABLE SOIL FOR THE MUSCAT OF ALEXANDRIA.

EDITOR HORTICULTURIST:—Our land is a light sand, gradually changing into a clay, all more or less impregnated with alkali, the heavy soil being saturated with it. On such soils we have been experimenting with the Muscat of Alexandria for the last six years, and find it unsuitable for sandy or strong alkaline soils. The young vines are winter-killed on the heavy, damp soil, often an inch or two below the surface. They seldom lose their tops on the sand, but do not grow thrifty; neither is the fruit first class. The berries sunburn, and do not make the best raisins. Out of forty-five foreign varieties it is the hardest one of all to grow from cuttings—a large per cent. always failing to grow.

On the red clay lands of this valley it does splendidly, and makes a beautiful raisin. Owners of such soils, with a sufficiency of water, may plant the Muscat with a prospect of being rewarded for their time and outlay. But I fear the trouble will be as usual. There will be such quantities set out, so that in a few years those who have hampered themselves with overplanting will force the market to such an extent as to render raisin growing unprofitable.

The red lands of San Bernardino Valley are destined to keep the lead they have already gained in this industry. Hot sun, an even temperature, absence of fogs, and immunity from rain, combined with the necessary class of soil and irrigating facilities, render this undoubtedly one of the best raisin growing counties in the State; though portions of San Diego County, away from the coast, may serve to be equally as good. Raisins may be made with more trouble, expense, and uncertainty as to quality, nearer the coast, but for a *perfect* raisin-growing section avoid places liable to foggy weather during the drying season.

W. F. PARISH.

San Bernardino, Feb. 18th.

A SUGGESTION FOR THE HORTICULTURAL SOCIETY.

EDITOR HORTICULTURIST—Dear Sir: I am, as you say, busy; but busy is no name for it. I work all the time; all my evenings and Sundays are employed. I dream of trees, and talk trees, and sell trees. I could not at present give any reliable information as to the amount of trees and vines on my own place nor how much it costs me to produce grapes, although I have books and keep my expense account accurately.

I would propose that we have an exhibition of grapes every meeting of the State Horticultural Society next summer, and a well-posted committee to name them. Let us have people from all sections of the State that are qualified to hunt up new kinds, or kinds that are not well known. Our State is full of choice grapes, brought from time to time by immigrants, some of which, if in the hands of well-posted parties, would prove valuable. I sent to

France for a kind of grape, and after spending time and money, have found the same thing at home in Stockton. We must study the habits and constitution of different varieties. Some will be productive in warm climates, and some will succeed better on the coast; some will produce good wine, others brandy, and others in certain localities will pay for the table or San Francisco market. In this way there will be experimental gardens all over the State, and much good can be done with but little cost. The same can be done with all other fruits, and this is the business of a Horticultural Society. I hold, however, that there is no other interest that will compare in value with that of the grape. W. B. West.

Stockton, Feb 21, 1880.

A LADY'S SUCCESS WITH RAISINS.

Editor Horticulturist:—Mr. Eisen has requested me to give you, for your paper, an account of my success in raisin making. That success depends largely upon the part of the State I am in.

Fresno County is especially adapted to grape culture. I expect in the years to come to see its now barren plains covered with green vineyards. My own vineyard, consisting of thirty acres, is of different ages. Some ten acres were, at its last bearing, three years old; the remaining twenty acres are composed of two and one year old vines, together with the new acreage I am putting out this year. All foreign varieties of grapes for raisins and wine flourish equally well and make vigorous vines. We have not as yet been troubled with the phylloxera in this county, and were this terrible ravager to make his appearance, we feel that we are equal to the situation in our ability to flood him out.

Last year I made three tons of fine raisins, bringing the highest market price. Three tons of raisins means about ten tons of grapes, and this from but a part of my vineyard, and only three years old.

The grapes of Fresno County are exceedingly sweet. The Muscat of Alexandria and the Muscatel de Gordo Blanco are the best varieties for raisins, having a much larger percentage of saccharine matter than those raised in the northern part of the State. When we have added experience in the curing, we will make a sweeter and better raisin. Our cloudless summer skies and almost torrid heat give a tropic richness to our fruits, and when they become abundant and well known, Fresno County will need no panegyrist.

Miss M. F. Austin.

Hedge Row Vineyard, Fresno Co.

[What one lady has done others also may do. Here are glimpses of independence for tired teachers, shop girls, milliners, and servants. Save enough to buy a piece of grape-land, choose it wisely, and plant in faith.—Ed. Hort.]

The Seed-Growing Future of California.—Peter Henderson, of New York, writes us, speaking of the possible future of California as a seed-growing State. He says: "I think it safe to predict that before another half century has passed away, that the business of seed-raising there will be an immense industry. You have just the conditions of climate, rarely to be met with, for the development of seeds."

The Asbestine System of Irrigation.—R. W. B., of Napa, writes to us, under date of Jan. 30th, saying: Will you kindly give me definite information as to the Asbestine system of underground irrigation? What are its peculiar features? I mean to irrigate my strawber-

ry plants underground in future, and wish to adopt the best plan.

We have seen the Asbestine system in operation. It works well, and the process of making and of laying down is practical. There may be better methods, but if so we have not yet seen them. The cement of which the pipe is made cannot be penetrated by any roots of trees. The flow of water is easily regulated, by means of the plugs in the short upright joints of pipe.

In several successful cases of sub-irrigation tiles of porous earthern-ware have been used, but we consider the Asbestine system an improvement.

NOTES ON PINE-APPLE CULTURE.

New Britain, Fla., Jan. 15, 1880.

Editor Horticulturist—Dear Sir: I am sorry to say that my own experience with this fruit is so limited that I would not feel justified in writing an article on its cultivation. I have had a few plants for a number of years, which, when not too much neglected, give us a few very fine pines from July to January. The last three or four years their cultivation on a larger scale has been undertaken by parties on Indian River, Lakeworth, and other localities, but in order to give any reliable information on the subject, it would be necessary to spend some time to gather up the experience and information in possession of these parties. I am informed that one man is growing fine fruit on the poorest sandy scrub land, simply by mulching it heavily with pine straw or other litter. Some parties advocate heavy land, and others land which can be flooded and thereby protected from frost. I have put up a few posts, 2½ feet high, on which I have laid scantlings and on these I throw a few pine boughs or palm leaves in December, and leave them till the last of February or the first of March. This has protected mine perfectly from any frost we have had for the last 8 or 10 years. The only fertilizer I have tried is super-phosphate. I have found it most convenient to root the plants in a box or bed so close together that the sand cannot wash into the heart, and where they can be conveniently kept moist or the ground mulched. They may be set in these places at once by sticking them through a palm-leaf, or piece of cloth or paper, to protect from sand, a precaution which may not be needed with you, as you are not blessed with sand to the extent we are here. I always strip off a few of the lower leaves of the suckers, so as to leave the end clean. I think they throw out roots a little sooner, but they strike roots readily in from 10 to 30 days, if kept moist and the heart clean, and after they are well rooted they will stand a severe drought. I do not think it is any harm to grow them close together in the hill—say 2 feet apart—and let the leaves interlock. The rows must be at least 3 feet apart, in order that one can walk between them to pull up weeds. A buckskin glove is needed for this work, to protect from the sharp saw-like teeth on the edges of the leaves. J. A. Bostrom.

The Los Angeles people are much interested in sugar beet experiments, and they propose to give it a fair test. A good many acres of land have been sown, and a sugar factory is talked of.

There is quite an industry springing up in this State in the culture of the Dalmatian insect powder plant (Pyrethemum carneum). G. N. Milco, of Stockton, has made it profitable, and he has now associated several other gentlemen with himself in the enterprise. They are planting out a large tract in Merced County.

NEWS FROM FIELD AND GARDEN.

A ton of peaches makes 1,000 cans of fruit.

The codling moth is reported from Contra Costa County.

Cotton was grown by Dr. Kimball, of Solano County, last year.

The canneries of California turn out $2,000,000 worth of fruit yearly.

Mr. Wm. Cantelow, of Pleasant Valley, has a number of fruiting lemons.

On the 20th of January, the apiarians of Los Angeles held their annual meeting.

A. B. Hotchkiss, of San Diego County, has fruited both bananas and guavas.

The Japan plum is valuable. Five kinds have been introduced into this State.

S. Washburn, of Placer County, is planting 160 acres of oranges near Rocklin.

There is still time to plant fruit trees in some of the mountain regions of the State.

Many new hop fields have been planted in this State. The prospects for that industry are better than heretofore.

A Washington Territory farmer raised a ruta baga turnip last season which weighed 27 pounds, and measured three feet in circumference.

Japanese persimmons are reported from all parts of the coast, and of all sizes—one inch to three and one-half inches in diameter.

The Asbestine sub-irrigation company claim that they can make their cement pipe for two cents a foot, and lay it for three cents more.

For wind-breaks in the San Joaquin, plant South Carolina poplar, eucalyptus, corkbark elm, and Monterey pine. The poplar and pine are deciduous.

The beet sugar factory at Alvarado, Alameda County, is now turning out 1,000 pounds of granulated sugar each day, besides enough of a coarser grade to bring the total yield up to 160 carloads monthly.

SELECTIONS FROM OUR EXCHANGES.

A Beautiful New Climber.—A gentleman has sent the Anaheim *Gazette* some seeds of a new and lovely climbing plant from Colombia, South America. He says in his letter to the *Gazette:* Each of the inclosed is a single seed of the Bellisima (most beautiful) a climber, which is botanically described by Prof. Holton in his *Eight Months Among the Andes*, as a Polygorum with a permanent petaloid calyx. The plant flourishes best in the *tierra caliente*, though it grows well about Medellin, just one mile above the sea level, and about the practical limit of the orange, (latitude 8° N.) At and near Cartagena and Barranquilla I have seen the low-thatched houses completely covered by the Bellisima. The vine bears profusely great bunches of pink flowers. The seeds should be placed in water (luke warm) and left there for forty-eight hours before planting. The better the soil, the more vigorous the vines.

How to Prepare a Level Surface for a Lawn.—Premising that the ground is free from great inequalities, I would top-dress with several inches of short manure, plow, harrow, and roll the ground. Set up the grading stakes

along one side of the plat as near the general level of the surface as possible, and go along sighting from stake to stake as before described—a laborer meanwhile evening the ground behind, for a spade's breadth at least, according as you direct him. Next run a similar line on the opposite side of the plat as near as may be parallel to the first, and in the same plane. Between these two main lines run a number of cross lines, not more than two or three yards apart. Great pains should be taken to make these guide lines as perfect as possible. It may even be advisable to run several lines between and parallel to the main lines. When this is completed, all inequalities are thrown into relief; the workmen can make no mistakes; they fill up all low places, and gather the surplus earth, if any, into high and narrow heaps to be either taken off the ground or scattered evenly over the whole surface.

Few persons indeed go to all this trouble with their grounds, but I know of no royal road to make a perfect work. Garden lines will sag. Nothing sooner takes the conceit out of a man who prides himself on a good "eye" than to ask him if a certain piece of ground is even or not, and then apply the instruments.

Proceed to rake the ground evenly. Find out how much lawn grass is generally sown to the acre, and take my advice and sow just double the quantity. Sow half in one direction and half at right angles to it. Rake the surface at least twice, and in different directions. Roll heavily.—*John Watson in the American Farmer.*

Osbeck's Sumach.—There is, in the *American Agriculturist*, a department known as "Notes from the Pines," the only trouble with which is that it does not appear often enough to suit the readers of that journal. From the last installment of these delightful "Notes" we quote as follows:

For some few years we have had a shrub in our grounds, Osbeck's Sumach, that has pleased me much, by its generally robust aspect, and the healthy vigor of its dark, thick leaves. The plant is a native of Japan, and has been called, in some European continental gardens, Rhus Japonica. I came across it several years ago at Ellwanger & Barry's. Its leaves resemble those of our native Dwarf Sumach (R. copallina), in having the common petiole winged between the leaflets, but are much larger and without the shining surface of the other. Prof. Sargent informs me that it flowered with him this year, and that it is still more attractive in bloom. But its autumn leaves! It takes on yellow, orange, and scarlet, which are blended into every intermediate shade, and all with a brilliancy and richness of color that, should I use adjectives to adequately describe it, I should seem extravagant, while the printer would use up all his exclamation points and get "out of sorts."

Little Things in the Vegetable Garden.—Much of the value of a garden consists in the many little things which it affords; things which in themselves can hardly be considered food, but which render other food more palatable, or add to the attractiveness of the table. Few who are fond of pickles and relishes, will fail to provide for cucumbers, lettuce, peppers, martynias, nasturtiums, and similar vegetables. The ones more generally neglected are parsley, marjoram, summer savory, thyme, sage, mints, fennel, dill, coriander, caraway, etc. All these are of the easiest culture, and may be grown from seeds,

most of them giving returns the same season where ordinary garden culture is given. Celery is another product which is seldom found in the farmer's garden. I think that few would like to go without it after having enjoyed it for a single season, especially as its culture is not difficult. The seeds may be sown, and the plants transplanted at about the same time as cabbages, in rows four feet apart, and six inches apart in the row. The soil must be well enriched in the drill, and the plants not allowed to want for water at any time during growth.—*Country Gentleman.*

THE RED SPIDERS.—Although very small and easily destroyed, they often do great mischief. They are on the under sides of leaves, and often escape notice, being so small as hardly to be seen without a microscope. They are light yellow, with lateral red specks on the back. They can not bear moisture, and are destroyed by a very damp atmosphere or by dipping the plants into tepid water. Syringing with a garden engine will do for outdoor trees. Sprinkling with flour sulphur is a sure remedy.—*Fruit Farm.*

HOW TO DESTROY MOLES.—In the early spring make a stiff dough of corn meal mixing in arsenic. Make a hole in the runway and drop in a lump of the dough the size of a marble. Lay a lump of dirt over the hole to exclude the light. Follow this up and you will destroy the moles.—*Fruit Recorder.*

As a weed destroyer, carbolic acid seems likely to prove a boon to gardeners. Such weeds as dandelions are killed by one application, the mode of applying it to destroy single plants being to make a hole in the crown with an iron point, and then pour in a little of the liquid from a bottle. For paved yards, and also for garden paths, the carbolic is mixed with from ten to fifty times its quantity of water in a bucket, according to its original strength, and applied with a brush or broom, or from a rose watering can, a sunny day being the best.—*Florist and Pomologist.*

THE GOOD LIFE.—

It is not growing like a tree
In bulk, doth make man better be;
Or standing long an oak three hundred year,
To fall a log at last, dry, bald, and sere;
A lily of a day
Is fairer far in May,
Although it fall and die that night;
It was the plant and flower of light.
In small proportions we just beauties see,
And in short measures life may perfect be.

—*Ben Jonson.*

Editorial Department.

VINE-PRUNING IN CALIFORNIA.

At the Jan. meeting of the State Horticultural Society, the Secretary read a paper written by R. B. Blowers, of Woodland, one of the most successful grape growers in the State. He spoke of the fact that while many new varieties of grapes had been introduced into this country from Europe since the primitive settlement of the State, the old method in vogue at the missions of pruning with short spurs, leaving from one to three buds to each spur, was still in use. For this reason many varieties of grapes had been thrown aside as worthless and shy-bearing, solely because the cultivator was ignorant of their habits and necessities. His experience in central California was that every variety demanded somewhat different treatment from every other. The Muscat family should be headed just above the ground, with from one to four spurs, according to the vigor of the vine, always keeping in view balance and symmetry, and the ability of

the vine to produce good fruit without overbearing. The Muscat is very sensitive to cold, and if pruned high is brought more into the influence of cold winds and the sap is chilled. When it again flows part of the young grapes are found to have lost vitality, and the grape or raisin product is injured. Other varieties, like the Tokay and Black Prince and others, can gradually as they grow old have their heads formed from 8 to 12 inches from the ground, giving room for their long clusters.

Some varieties will not produce paying fruit at all unless long canes are left, as, for instance, the Emperor. On this vine the first, second, and third buds rarely produce fruit, and being long-jointed, the short-spur system would destroy the crop, as they do not bear second crops of any magnitude. In this respect they differ from the Black Morocco, which bears a heavy second crop, but no first crop if pruned short. The writer's mode was to keep the head as near the ground as possible, then pruning the best low canes from two or three feet long. After that he cut away all the wood above them, leaving enough short spurs to bear canes for the next year's crop, and tied them securely to stakes. The vine-grower will find many varieties which will repay treatment in this way, especially the seedless varieties and many others called shy-bearers. By noting the different habits of his varieties and the conditions of soil and exposure to the winds, etc., he ought to grow creditable grapes anywhere from Tehama to San Bernardino.

ROOM FOR MORE PEOPLE.

California is a curious land. People love it deeply, or hate it intensely. It has been the one talked-of region of earth since the discovery of gold. Overrated? yes, very often; if we merely consider the present hour. We Californians are egotistic enough, we talk "climate," and rare "scenery," and fairly drip with resources. Doubtless a great people.

But, deeper than our many frailties, there lies a conviction that really, solemnly, in very truth and earnestness, this is a coming empire; this Pacific Coast is to be the home of new millions, the refuge of old arts, the birthplace of high thoughts, of pure ambitions. It may take a hundred years, but sometime our valleys will be teeming with people, our hills will be clothed with vines and forests.

Wheat farming has been carried on, to the exclusion of everything else, because the farmer knew how to raise wheat, and he knew he could always sell it. Sometimes he did not get a fair return for his work; but he always got the market price. Farmers knew that if they grew barley, or oats, or buckwheat, English mustard, flax, beans, or potatoes, the market, being more local, was less stable than that for wheat. The same statement applies to the raising of fresh fruit for market. Some of it pays, but at times the supply is much too great. So, blindly enough at first, a few men made experiments. Could we not produce dried fruits, raisins, oranges, wines, olives, nuts, and a myriad other articles, in their nature as staple as wheat? That was the problem which the past ten years fairly solved. We can now say to every toiling American, or intelligent foreigner: You may come here, and earn a home, and ten or twenty acres planted in vines or trees will make you a living.

Over nine-tenths of California the grape is at home. It fails only in the extreme northeast, around Goose Lake, and in the upper portions of the Sierra,

where winters are too severe, and close to the ocean, north of San Francisco Bay, where fogs are too heavy. The native American grapes will grow at altitudes where the foreign grape is destroyed. There are thousands upon thousands of acres of government land still left in this State, which will, inside of fifty years, be planted in vines, if this industry develops as appears possible. There are thousands upon thousands of acres which will yet be irrigated, and made like the gardens of the East, such as those about which the gleaming rivers of Damascus went, or those which made the fair hills of Judea so beautiful.

The fundamental facts now stated here for men's warning are these three: First, there is room for honest, sober industry on this coast. Second, immigration will come to us as a flood, some of these days. Third, have faith in this beautiful land, save your money—every cent—invest it, not in stocks, but in land to cultivate, in lots to build on, in smoky mills, and toiling factories. Use, and use only, consecrates money.

UNDER HIS OWN VINE.

He was a clerk in a dry-goods store in San Francisco when I first knew him. Tom Westlake was rather a slim, pale person, in no wise remarkable except for a curious persistency. A thought stayed by him for weeks. If you dropped a casual hint, it clung fast in Tom's mind. I do not praise the habit, for one of necessity gets brass more often than gold in that way. I simply state the fact, and leave it to a discerning public.

1870 was the year. That seems an age ago to some of you. Ten years, for many a rolling stone, has revealed half the world, and many a descent and abyss besides. Ten years has ruined fortunes, and has made millionaires. The ten years to come hold an infinity of possible things. Well, in this fateful year of 1870, Tom Westlake heard a man remark, casually enough, that grapes and fruits would become great industries on this coast. "I can make grapes pay better than the same land in wheat, and they will bring a higher price in a few years," added the farmer. Some months later a much-spectacled doctor said to Tom Westlake, with all due emphasis, "You must leave the city, and be out of doors most of the time."

So our hero bought a small piece of land, for all this is founded on the fact that he had watched the pennies, and had laid by a little money. The way he chose his home was simple enough. In the first place, he frequented the public libraries, where local papers are kept on file, and these he compared carefully. A bright, busy, energetic community always has a bright, busy, energetic newspaper as its representative. In due course of time he had a list of places desirable to visit; and so, in the quietest sort of way, he examined the main features of Sonoma, Napa, Santa Rosa, Vacaville, Woodland, Fresno, Newcastle, Santa Barbara, and Los Angeles, and he bought his twenty acres. It will not do to mention which one of these localities he finally chose. You see there are also many more places, both south and north, from San Diego to Shasta, fit for vineyards and orchards.

For three years it was a hard pull. He planted his vineyard himself, having watched how others did it; he built a shanty, lived mainly on vegetables raised in his own garden; wore overalls, heavy boots, and an antediluvian hat. Fifty dollars an acre the land cost, and this was a cash payment,

which, however, left the Westlake exchequer in a demoralized condition, and thereafter it remained lean, as we have said, for three years. But, in ten years' time, the grapes brought him out, made him independent, put a cottage home in the place of the shanty — a nice, bright cottage, with plants on the porch, a canary in the window, merry voices, and small child-laughters everywhere. By door-post and eaves the tendrils of the blessed vine cling, and clusters ripen into royal purple in the autumn afternoons. Is not all this better than the measuring of tape, and the loveless realm of a boarding-house?

A MODERN UTOPIA.

There was once a land of rare beauty, with great mountain barriers towards the east, pale battlements of snow, and realms of pine, cedar, cypress, and juniper. There were quiet lakes, shining rivers, mist-veiled waterfalls, and restful woods. There were broad valleys, great as prairies, yet never out of sight of the blue hills; round, fertile valleys never quite out of shadow; long, sheltered ravines where singing waters murmured; lowlands, by rivers and bays, for pastures rich as Holland; plain-lands, level as a floor, for golden miles of wheat; table-lands, for oil of olive and wine of grape. So the fair land waited, nameless and undivided, with the sweet trembles and long waves of an unsailed, azure sea, bright and glad along the unknown coast.

It chanced, in the fullness of time, that men found gold among the rocks and passes, and along the furrowed prehistoric rivers of this long-silent land. Then there was a tossing, human flood; a stormy cry; a rude, swift battle which brought out the worst of men—and the best. The founders of a State camped in forests of cedar, and wrestled with giant forces in the earlier heroic mood. Next, beside the industry of mining, the industries of farmer and stock-raiser came; art, science, manufactures, thriving cities, an outdoor, healthy race—gold still left in ravines and rock-ledges, hills yet unclaimed, slopes yet unplanted—why this land became the envy of toiling nations, the study of statesmen, the pride of a continent.

Slowly, however, through pains and and struggles, the hardest lessons were learned. The land was so rich, so overflowing with wonderful resources, its harvests were so fruitful, its winters so mild, that out of the very surplus of wealth there grew dangers, and fevers of speculation, doubts, hatreds, bewilderments. There were crying evils of slander from which no man was for a moment safe; an atmosphere full of political war-cries; and vaguely along the horizon the approach of complex, social, and industrial problems. Such things happen even in Utopia.

But all this while there was a pulse underneath the surface of things; there was a hope-sign, growing brighter. In narrow ravines, on mountain slopes, by the margins of lagoons and rivers, on wide plains, wherever there was room, men began to found homes, and to plant gardens, orchards, and vineyards. Thousands of small farms, and countless new industries began to appear. Men of scant means joined with their neighbors, and bought together, and founded colonies devoted to innumerable occupations.

In the southern mountains were oranges, bananas, olives, carobs, sericulture, cotton-growing, sugar-making. Far up the slopes of the snowy peaks were orchards and vineyards. The mountain lakes, and the upper ravines of the streams, were parts of a vast, costly, but successful system of irriga-

tion, which gave to every foot of land in the great central valley its requisite amount of water, and changed plains into expanses of alfalfa. The people of this modern Utopia, grown wiser than before, began to love gardens, and garden-talk, and the happy pursuits of horticulture more and more with each succeeding year.

It became a land of tree-hid cottages. There were very few extremely rich; there were none extremely poor. By every roadside there were fruit and nut trees, and hedges of roses and shrubs, and the man who would not cover his fence with blooming vines was accounted a sorry neighbor. Every spring, too, in the month of March, there was a great holiday, when both children and grown up folks went out picnicking, and sowed seeds of pansies, sweet peas, larkspurs, and mignonette, and all the dear old-fashioned flowers. They sowed them by the roadsides, and in the margins of woods, and on hill-sides. In that country, too, if a man ate an apple or peach, or any fruit whatever, he made a little hole in the ground and planted the seed there, and went his way contentedly.

This is only a glimpse of what is yet far enough off, but it need not always remain a mere Utopia. The land is most real, and the people are hopeful and strong. Let us see what we can do with this our dominion.

OUR GRAPE NUMBER.

We do not wish to sound our own praises, but it does seem to us that the present issue is more than usually valuable, more than usually practical to the people of the State, and we hope that our friends will help our good work forward. There is not an orchardist or viniculturist in the State who can afford to be without this monthly. We propose to make it better and better by your kindly help. There are other subjects to take up. We may conclude to give an orchard number, or a garden number, or an orange and lemon number. Remember that we are trying to work for the whole State, not for any one section. We are building up a legitimate business enterprise, and we ask the help, the kindly good-will, of those who love homes, and all which the civilized home implies.

THE LADIES' FLOWER MISSION.

Months ago we wrote something about the delight of giving flowers to children; of having with one, in street rambles, a cluster of old-fashioned, bright and fragrant posies, violets, blue and spicy, graceful fuchsias, brown and yellow wallflowers, lilies which sparkle in the sunlight, and purple roses which are black in the shadows; to carry these, and all other attainable posies, partly for one's own delectation, but chiefly for the sake of saying to some puny-faced, sad-eyed child (who is poking furtively at a grass blade beyond the railing), "now here is a blossom for you," and suiting the action to the word.

But there is something better than promiscuous wandering about with a bunch of flowers. Although we still believe in giving flowers to children in the street, we have found out what to do as a steady thing with the surplus flowers of the garden. We give them to the Flower Mission. This is an association of young ladies from the different churches of San Francisco, who meet at No. 218 Stockton Street every Thursday morning for the purpose of making up the flowers and fruits, which kind friends have donated, into bouquets and parcels for the sick in hospitals, and for the poor and needy.

They have flowers sent them from Berkeley, Oakland, San Jose, San Rafael, and many other places.

If any of the readers of the HORTICULTURIST have surplus flowers (and it does plants good to cut the flowers often), let them send these blossoms to No. 218 Stockton Street, and we feel sure they will be well used. In fact, this is organized and successful charity work of the kind which helps both the donor and the receiver. If we rightly consider, there are three parties in the chain of blessings: the persons who gather buds and blossoms in the dewy morning; the busy, hopeful ones who pick them over, and chat as they make bright little bouquets; and the sick and feeble, in dismal garrets, or stretched on iron bedsteads in monotonous wards of hospitals, shut out from the crisp scents of the woods and fields. Let the healthy people remember the poor and the sick. Send flowers to the Flower Mission.

STATE HORTICULTURAL SOCIETY.

On February 28th the State Horticultural Society held their regular monthly meeting, in the Y. M. C. A. Hall. We are again forced to give brief room to the events of the afternoon. The table was covered with citrus fruits—both oranges and lemons—from the southern counties. There were also on exhibition some of the Kimball Bros.' pickled olives, which were sampled by all present, and were declared of splendid quality. Mr. Rixford brought a number of small Jujube trees, and gave each member of the Society one to take home and plant.

The main feature of the afternoon was a discussion on pruning, led by W. W. Smith, of Vacaville, who illustrated his method by means of trees from his nurseries, pruned and unpruned. His practical illustrations were of great interest and value. Most of the members took part in the discussion which followed. Mr. Rixford read a paper on the Jujube tree. The committee appointed to consider the question of a Botanic Garden reported that it was, in their opinion, unadvisable to seek State aid at present, and that the private enterprise of men of wealth and taste could, it was hoped, be relied on to found such gardens. The committee was ordered to make further investigations, and report again at the next meeting.

The subject for the next meeting is on "Cultivation and Fertilizers." Messrs. Webster, of Fruit Vale; Blowers, of Woodland, and Shinn, of Niles, are appointed to lead in the discussion, and will prepare essays on the subject.

OUR APRIL NUMBER.

The next number of the HORTICULTURIST will contain articles from all directions, some of which are now in type, but have been crowded out by the press of grape news. There will be a story from the mountains of Trinity, and notes from valley and sierra, from Humboldt and San Bernardino. Meanwhile, you who read this, do not weary in well doing. Please invest in a postal, and tell us what you are doing in the garden, and what are the blossoms of the month. Tell us of your neighborhood, of the soil and climate, of the orchards and vineyards, and, if all this fills more than a postal, please make a letter out of it.

AMONG the articles in hand for our next number we have "The La Nankin Rose," "Why does Water Prevent Frost injuring Tender Trees," "A California Garden in December," second paper on the "Culture of the Pine-apple," etc.

Editorial Notes.

VINEYARD NOTES.—California Sherry is made of the Bogota and the Mission grapes, in equal quantities.

Plant about 1,000 grape cuttings to the acre.

It costs about $20 per acre to plant a vineyard.

True wine grape soils are charged highly with oxide of iron.

The Tokay Grape is being planted considerably in the Sonoma Valley.

Much valuable grape land is still open to preemption in this State.

Wine made from Mission Grapes was shipped from California in 1849.

In 1780 the Franciscan Fathers made wine at San Gabriel, Los Angeles County.

Profits of from $200 to $1,000 per acre have been made from raisin grapes in this State.

Grape vines require careful cultivation, especially for the first three years after planting.

The Muscatel is a choice raisin grape. The Muscat of Alexandria comes next in value.

The New York *Herald* says that California makes as good champagne as any in the world.

Six feet apart, each way, is a good distance for wine grapes; 8 or 10 feet for raisin grapes.

Mr. Blowers, of Woodland, has sold all the cuttings of Seedless Sultana which he could spare.

Los Angeles County expects a yield of 2,250,000 gallons of wine and brandy this coming season.

Grafting on the California wild grapes to prevent phylloxera has been tried, and prospects of success are good.

Although the phylloxera moves slowly on this coast, still it is not an enemy to be despised. Be warned in time.

If thoroughly cultivated, grapes will produce well without irrigation on many of the slopes and uplands of California.

The *Semi-Tropic* says that there now are 5,172,000 bearing vines in Los Angeles County, and 1,200,000 more were planted this winter.

J. T. Lovett, in the *Rural New Yorker*, says that the Eumelan Grape is, in quality, the finest of American grapes, but is a somewhat uncertain bearer.

The *Botanical Index* says that Missouri, with 1,500 acres of grapes, produces 500,000 gallons of wine; Ohio has 4,000 acres; California has 60,000 acres, planted with 45,000,000 vines.

Maps published in France show the extent of the phylloxera ravages. Over 800,000 acres of vineyard are reported as entirely destroyed, and 600,000 acres are already invaded by the foe.

Experiments are being made with the native grape of this coast, with the view of using it as a stock. It grows from seed readily, and makes a thriftier stock than when cuttings are used.

Bi-sulphide of carbon, used to destroy the phylloxera, is applied three times a year—in April, July, and October. A repeated use of small doses is more effective than larger annual applications.

The foreign grapes, so successful in this State, are not a success anywhere east of the Rocky Mountains, except in limited parts of Texas and in the warm belt region of South Carolina and Georgia.

The Prentiss, a new white grape of New York State, is a seedling from the Isabella, is very hardy, and will keep until February. The quality is said to be superior. Vines will be offered for sale next year.

In the phylloxera-infected regions of France deep trenching and manuring, with an application of turpentine and powdered resin to the roots, is said to be cheaper than sulphuret of carbon, and is equally effective.

It is estimated that California, with her viniculturaI resources fully developed, would support nearly 2,000,000 persons in that industry alone. We might expect to see 3,000,000 persons kept busy by the indirect proceeds of the wine crop.

The favorite varieties at present in this State are the Zinfandel, Muscat of Alexandria, Gutedel, and Franklin Riesling. The Folle Blanche and Berger are used for light wines, and the Grenache and the White St. Peter for heavy wines.

In Southern California a level piece of land is said by J. L. Rose, a well-known authority, to be the best for a vineyard. If a slope must be used for a vineyard, let it be a northern slope, for we have sufficient sun in our warm climate.

The *Florist and Pomologist* says that the best four white table grapes are the Muscat of Alexandria, the Foster's White Seedling, the Duke of Buccleuch, and Du Hogg. Of these, Foster's White is the best early variety. The Duke of Buccleuch is the best summer kind.

In Shasta, Tehama, and Butte counties there is much land as yet unpre-empted, on which grapes will some day be planted. The Government lands of Central Shasta, lying near the Sacramento River, are level. There is a territory twenty miles in length, and several miles wide, almost unsettled at present

The vines of Chinese and Japanese wild grapes have been discovered to be perfectly phylloxera-proof. This is stated in *Revue de Horticole*, and in *d'Agriculture*. The species are Vitis aconitifolia, V. heterophylla, and V. inconstans. The grape produced by grafting on these stocks is said to be better than that from vines on the American stock. The grafting of European vines on these Asiatic vines is proceeding on a large scale.

A grape-cure is to be established next season in Hammondsport, New York. The grape-cure is popular in some parts of Germany, and is thought to be most beneficial for diseases of the liver and stomach. Now, we are moved to inquire, where in the world is there a better point for a grape-cure than in Pleasant Valley, Solano County? There some of the earliest grapes are gathered, and there they are

abundant for months, and in great variety. Yes; California must have a grape-cure.

THE CLASSIFICATION OF GRAPES. — Cultivated grapes are divided into two great classes—the grapes of the old world and the grapes of the new world—and these two families are distinct in fruit, foliage, growth, and constitution. The best classification of the varieties of European, or, as we call them, foreign grapes, with which we are acquainted, is that given by the *Florist and Pomologist*, of England. In this plan there are three sections, as follows: Grapes are known, firstly, by the flavor of the fruit, as—

(1) Sweetwater Grapes.
(2) Muscat Grapes.
(3) Vinous Grapes.

Secondly, by the color of the fruit, as—

(1) Black or purple.
(2) White, yellow, or green.
(3) Red, tawny, or rose-colored.

Thirdly, by the shape of the fruit, as—

(1) Oval.
(2) Round.

This makes, in all, eighteen groups, and by combination any grape can be described. We would, for instance, describe the Black Hamburgh as an oval, black, sweetwater grape; the Gros Coleman as a round, black, vinous grape, etc.

PRUNING GRAPE VINES. — The fruit-bearing shoots spring from last year's growth. This is the primal law of the whole business. Early in spring cut away the shoots which grow from wood older than one year, as you will get no fruit from such shoots. Prune early. Vine bleeding does do harm. When the small clusters appear, rub off all surplus shoots which are blossomless. Pinch off each shoot three joints beyond the last cluster.

LAWN NOTES FOR MARCH.—Sprinkle bone meal on the lawn. It makes the grass grow vigorously, and is the best fertilizer obtainable. It is neat, clean, not very expensive, and does not bring weeds and coarse, wild grasses, as does the commonly used barn-yard manure. Besides the weed trouble, barn-yard manure makes the lawn look like a stable lot for a month at a time, and should be tabooed. Put it in the orchard or in the vegetable ground, where it may be dug in at once. Phosphates are the true lawn fertilizers. Keep the borders of plants, and the round beds on the lawn, neat and trim. It is slovenly work to let the grass grow across, in spots and ribbons. Beds for foliage plants on the lawn are very desirable, and must not be neglected. Monthly roses, of all colors, grouped on the lawn are charming. Fuchsias need a partial shade to bloom in fullest perfection. Geraniums will bear our hottest sun.

MANURE FOR VINES.—Bone dust, or fragments of large bones, or calcined bones, dug in about the roots, furnish one of the best manures known. Wood ashes, the ashes from the vine-clippings themselves, iron scraps, filings and rust, phosphates of any kind, leather refuse, and similar articles rank high for vineyard uses.

SULPHUR FOR VINES.—It is necessary to use sulphur on grape vines at least twice during the season, or they are likely to be attacked by mildew in various forms. Sulphur is used by all successful viniculturists. In practice the finest quality of sulphur should alone be used. The best way of scattering it is by a strong bellows, about half as large as the common kitchen bellows, made of light wood, and having a tin nozzle. There is a piece of wire gauze so arranged as to prevent the sulphur from being blown out in too large masses. The bellows will hold five or six pounds of sulphur, but it works better when a third or half of this quantity is put in. Commence sulphurizing just before the vines blossom.

CLIMATES IN WHICH THE VINE THRIVES.—Grape vines only succeed in places where late frosts are not known, and where the autumns are not excessively hot. The spring and the autumn climates are the most important. The mean temperature of the year must be between 50° and 65°. In Europe vines are successfully cultivated as far north as latitude 50°; in America, not beyond latitude 40°. Except on islands, or far up mountain ranges, the grape vine can not be profitably grown within 30° of the equator. The vineyard belt of the old world is 20° wide; that of the new world is only half that width.

THE MANY VARIETIES OF GRAPES.—There are, botanically speaking, about 21 species of the grape vine, but cultivation has produced an immense number of varieties. The French Government, some years ago, formed a nursery in which 1,400 varieties of grapes were grown, and this was far from being a complete collection.

MANURES FOR GRAPES.—Barn-yard manures are considered more hurtful than useful for grape vines. Potash should be a part of grape manures. Carbonate of potash, however, is the least valuable form. Sulphate of potash and chloride of potassium come next, and nitrate of potash is the most valuable of all potash. Applied at the root, passing through vine branches, leaves, and fruit, it assists the development of every part. The practice of burning the trimmings on the ground restores the potash left in the branches to the soil again, there to begin the same round once more.

THE WESTERN CATALPA TREE.—One of the valuable timber trees of American origin is the Catalpa. Hardly any other tree would be more admirable for use in California, on the plains of Solano and Colusa, along the foothills of Coast Range and Sierra,

and in the many fertile valleys. It is a tree of easy culture, of rapid growth, yet furnishing wood of great durability. Indeed, it seems as if it might in many regions be called the "farmer's tree." We are led to these remarks by having lately received from Robert Douglas, Waukegan, Ill., a number of small trees of the Western Catalpa, a variety that is, it is claimed, hardier, a better grower, and in every respect more useful than the older species Catalpa bignonoides. The new variety, which is called Catalpa speciosa, is the subject of a paper by Dr. Warder, of Cincinnati, and has been recommended by other good authorities.

Weeds in Australia.—Through the kindness of Richard Schomburgk, of South Australia, we have received a valuable publicalion on "The Naturalized Weeds and other Plants of South Australia." It is neatly bound in paste board, and is a most interesting monograph on the subject treated.

Concerning naturalized weeds, we are told that in Australia, as in California, the weeds of older countries follow the explorer, and are soon perfectly at home in the new soil. In many cases the newly-introduced weeds find the soil and climate so suitable to their needs that they spread with great rapidity, and soon possess the land, driving out the native plants. It is continually a question of the "survival of the fittest." The experience of our Australian friends show that a great number of most troublesome European weeds are now naturalized in parts of South Australia, and we must infer that Queensland, Victoria, and other provinces of that island-continent have likewise their share. The Cockspur (Centaurea melitensis); the Bathurst Bur (Xanthium spinosum); the Scotch Thistle (Onopordon Acanthium); the Variegated Thistle (Carduus Marianus); the Inula suavolens; the Sheep-weed (Lithospermum arvense); and the Cape Dandelion (Cryptostema calendulacea)—these, and others, already cover immense tracts of unoccupied territory, and extend farther and farther inland, to the destruction of the native grasses. Thousands of pounds sterling have been unsuccessfully spent by the colonial governments in endeavoring to extirpate the Scotch Thistle and the Bathurst Bur, both of which ruin sheep pastures, and seriously injure wool.

Among the weeds of foreign origin now becoming troublesome in Australia, we mention the following: Fumitory, a weed in gardens; Shepherd's Purse, which has spread by roadsides; Hedge Mustard, which found its way from Europe via Tasmania; French Catchfly (Silene Gallica), which spreads on sandy lands. The drooping Yellow Wood Sorrel (Oxalis cernua), a native of the Cape of Good Hope, was introduced into Australia as a garden plant, the first bulbs being sold at fifty cents apiece. It has now become a perfect scourge to the gardens, and has a notorious pre-eminence over all weeds introduced. The young bulbs, says Dr. Schomburgk, penetrate deeper and deeper each year, and so multiply that every young plant will produce from twenty to thirty bulbs until all other herbage is choked. It is also a great pest in the wheat fields. The common Fennel was introduced for medicinal purposes, and has spread along many of the water-courses, growing to an immense size. The Scotch Thistle made its sppearance in 1845. In some places it has destroyed the native pasturage, and forms impenetrable thickets. It has extended more than two hundred miles north from Adelaide. The Bathurst Bur weed is the great enemy of the sheep men, and depreciates the value of the wool 2d. to 3d. per pound. The Artichoke, originally introduced as a vegetable, and cultivated, grows wild along the streams, and is beginning to be a pest. The Inula suavolens was first seen in 1863, and has made thousands of acres of valuable pasture land completely useless. It is not so bad in cultivated lands. The black-berried Night Shade has also appeared in many places, and some species of Datura are prominent. Perhaps more dangerous than any of these is the Black Oat (Avena sativa, var. Melanosperma), which is almost ruinous to the farming community. The seed will germinate after lying many years in the ground. Large tracts of arable land have been ruined for wheat, this pest, in some cases, reducing the average wheat yield fully two-thirds.

We observe, on the other hand, that a number of good clovers and grasses have made themselves at home, and will, in a measure, atone for the ravages of these weeds. Some garden plants, not yet troublesome, have become acclimatized. Among these are some Œnotheras, Delphiniums, a Linaria, our Eschscholtzia, the Scabiosa, Daisies, some Malvas, and others. Ixias, Sparaxis, and other cape bulbs are spreading in pasture lands near the gardens.

The lesson from all this is very simple, but none the less important. Here, in California, we have most of the weeds now so troublesome in Australia, and we shall doub less have more. It becomes us to be careful not to disseminate them. It is the duty of gardener, orchardist, and farmer, to destroy noxious weeds as completely as possible. It is advisable to keep a constant lookout in the garden also, lest some new plant prove to be a weed in disguise. And what is a weed? Our definition for the present is this: A plant of so much vitality that, in the struggle for existence, it destroys more useful species. Many weeds have economic uses; but their powers of increase, and their immense vitality, make the life of the ardent horticulturist a continual struggle against them.

The Semi-Tropic California. February.

The second number of this new publication contains several readable and useful articles. It is largely devoted to the interests of Los Angeles, but we understand is printed in San Francisco. The difficulties of an editor doing successful work when at such a distance from his printer are countless, and we only wonder that he has succeeded so well.

THE

California Horticulturist

AND

FLORAL MAGAZINE.

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Contributed Articles.

PHASEOLUS CARACALLA—THE SNAIL FLOWER.

By W. F. PARISH, San Bernardino, Cal.

I wonder if the San Diego lady whom I disturbed in her sweeping recollects that long, lean, big-bearded man who, after looking for a long time over the fence, managed to ask for some seeds of the Phaseolus caracalla? The only time that I ever saw this plant in bloom was in this little San Diego yard, where it was growing against a high fence. (Why do they build such high fences in San Diego? The wind never blows there; at least they say it does not.) This plant in midsummer was covered with its curious-shaped, fragrant, very handsome flowers. Its foliage is thick and long, completely hiding the tall fence with its bean-like leaves. It must have covered a space of thirty feet long by ten high.

A seedling that I raised grew some ten feet when it reached the top of its pole, and kept drooping down, and twining up on itself all through the summer. It must have grown some thirty or forty feet in a continuous line. With me it stands all the light frosts without damage, but when it is cold enough to freeze the surface of the ground, then all above the root dies. My plants were all but one young seedlings, and wholly unprotected; considering the unusually cold weather last year and this, it is not strange that they failed to grow. With protection for one winter, until the wood hardens, I believe it will be hardy with me, and almost certainly in more favorably situated spots.

This Phaseolus grows readily from seeds. It is best planted where it is to remain, but it can be transplanted with care, and a proper trowel. Those I transplanted this spring made only half the growth of the one I left in the seed bud. So much for the Phaseolus caricalla as a rapid growing vine for covering large surfaces.

A New York firm offer it as "lilac blue," which it is not, and as "excellent for hanging baskets," which I believe will also prove a delusion here. An empty crockery crate filled with soil and suspended by stout chains over—say the front entrance—would be about the kind of "basket" needed for it in in our climate—at least I would recommend no one to try it in a smaller "basket." Is it a basket plant anywhere? It certainly does not seem to be one here.

My plants from seed planted this spring failed to flower. The only old one of this season's growth from last year's root (transplanted last year and this), also failed to bloom. If it will not flower more freely as a "basket plant," it will not be able to compete with others of the bean family.

There are few handsomer scandent plants than this, or any worthy of more extensive cultivation, yet it is very rarely met with either in collections or offered for sale in the catalogues of seedsmen. In any of the warmer belts of this State it will grow with a fair prospect of success, and it will well repay any amount of trouble or time that may be bestowed upon it. I should feel amply repaid if once in three years I could get such a show of flowers as covered that tall fence in that little San Diego yard.

THE LA NANKIN ROSE.

By PETER HENDERSON, Jersey City Heights, N. J.

I notice that your correspondent, Mr. Gustaf Eisen, in your January number, remarks about the La Nankin tea rose. Some six or seven years ago I imported plants of La Nankin and La Jonquille roses from William Paul, of London. All were true to name, I think, and held to their colors for some two or three years, which were as follows:

Of La Nankin, the bud, which was some two inches in length, was a rich shade of Nankin yellow for two-thirds its length, the other third being pure white clearly separate from the Nankin shade. La Jonquille was a smaller bud; the color was as near the color of a yellow Jonquille as well could be.

Now, and for some years, with me La Nankin has run into a sort of salmon shade of blush, without any sign of the beautiful white tip on the bud; again, as if to bother us, La Jonquille gets its yellow now and then tipped with white, as in the original La Nankin, though it is less liable to such freaks as La Nankin. In my work "Gardening for Pleasure," written in 1875, at page 49 (in discussing the theory of graft hybrids, advanced by Mr. Darwin), I make the following statement:

"In a bed of about 100 of the new tea rose, La Nankin, all made from the cuttings of one parent plant, we have had four distinct varieties. The original flower or bud has its base or lower half of a nankeen yellow color, while its upper half is pure white, the separate colors being clearly defined. Yet among the lot there are some plants bearing flowers of the nankeen color, without white; then again pure white without nankeen; and on one shoot the flowers came of a light pink, or blush, shade."

Now, when a rose behaves in this coquettish style, it is not to be wondered that our amateur friends get bewildered, and that they complain when descriptions are entirely different from the actual flower; but these are only shades of difference that any one familiar with the shades of roses will soon detect, as the "sporting," as it is called, is usually only in the flower and not in the foliage or the style of growth. But when, as your correspondent asserts, he gets at one time for his "premium rose" Marie Von Houtte, a white; Annie Oliver, pink; Saffrana, orange yellow; and Therese Lot, crimson; then the firm from whom he buys is careless, or something worse. One error might be excusable, but when four different varieties are substituted one for the other, then the conclusion is inevitable that there has been either gross carelessness or, as Mr. Talmage would say, "moral rottenness."

Let me compliment you once more on your paper. We have nothing of its

class more readable in the country, and certainly none of our Eastern magazines devoted to garden or farm can boast of as many intelligent correspondents from one State as you have from California. It has long been a wonder to me, when we consider the thousands of practical horticulturists we have now in the great States of the Union, how so very few of them vouchsafe to give their experience in the magazines devoted to gardening.

FERNERY NOTES FROM FLORIDA.

By Mary C. Reynolds, St. Augustine, Fla.

I have been much interested in gathering and pressing our Florida ferns, and also in experiments with their cultivation. I presume no State in the Union surpasses ours in its apparent endeavor to hide away its ferns. Unnoticed "sinks" in the ground, swamps and high trees are the artifices used by Dame Nature to keep her treasures from the prying hands of men and women, for if the truth is told, I believe she has quite as much to fear from the latter as from the former. I have myself collected twenty-seven species, and obtained two or three others by exchange; there are a few rare ones yet to be added to my collection.

For fernery purposes our large pretty Aspidium patens is excellent. The fronds are from 1 to 3 feet long, from 4 to 14 inches broad, and droop gracefully. Its wildwood companion, A. Floridanum, a close relative of the Northern A. cristatum, is a fine, glossy, dark green fern, attaining about the same size. Polypodium aureum is a good addition to these. It grows, when wild, only on the trunks of Cabbage Palmetto trees at the bases of the leaves, where the rootstocks can fasten themselves in the soft wood. Sometimes these rootstocks, thickly covered with their shining brown chaff-scales, are a foot or more long, and nearly an inch in thickness. It seems so strange that this aureum should do so well when transplanted to the fernery or open fern box with its rootstocks earth-covered. It sometimes takes a month or two to become accustomed to its new quarters, but when fairly started, grows right on.

One of our best and rarest ferns is the Adiantum tenerum, discovered in this State two or three years ago, and not before known to belong to the United States. It grows in old, rich "hammock" lands, where bitter-sweet orange and Magnolia grandiflora trees attain a lofty size. The tenerum resembles the A. Capillus-veneris when it sends up its first few fronds, but the older ones are often two feet high, and are broadly triangular in outline. The plant is symmetrical and graceful in habit, and is a constant delight to the eye. In the fernery it is apt to "damp off" as florists say, but it flourishes in a flower-pot.

Two small species, Asplenium firmum and A. myriophyllum, are good acquisitions for a fernery. The fronds of the former are of a firm, glossy texture, and are seldom more than 6 or 8 inches long; the latter presents a cluster of dainty, finely-dissected fronds, and is just the thing to be put beside or in the crevice of a piece of limestone rock. These two ferns and the Pteris Cretica are natives of such rocks. This Pteris with its ternate or five to seven-parted fronds makes a pleasing variety in shape among the fern leaves. This will also apply to Polypodium phyllitidis, a most singular fern, always causing the unlearned (botanically) to remark "That is not a fern!" The fronds are simple, entire or with slightly waved leaves and are of a rich dark green color. They bear cultivation well. It is a source of great amusement to me to watch the tiny "crosiers" or unrolling

fronds of the different ferns in my window boxes, and it is especially interesting to see the long undivided leaves of the Phyllitidis uncoil. Asplenium Trichomanes and A. ebeneum are found here occasionally in deep damp woods, and are very pretty companions for the ferns already mentioned.

A CALIFORNIA GARDEN IN DECEMBER.

By Miss Martha Pulsifer, San Jose, Cal.

Among the happy things I had promised myself before the old year should have taken its departure, was a visit to a certain fair garden of which there had been given me by various persons most charming word-pictures. I chose the 8th of December for the day—one of the most sacred to my memory as the most holy set apart for the saints—on which to feast my soul on "God's smiles."

A quaint house standing on an eminence, an abode of peace and contentment, as its every feature plainly tells you; its owner, a gentleman of learning and refinement of soul, finding in his sweet flower-children and books congenial companionship, not so readily met with by sensitive spirits in the outside, rough, bustling world. The slanting rays of the winter sun were falling brightly upon the green and blooming beauty, giving it that soft, yet brilliant look of such things seen through the unearthly charms of dreamland.

The Solanum jasminoides, climbing in graceful profusion up the sides and in and out the dormer windows, playing at hide-and-seek, a mass of blooming loveliness that seemed a part of the house itself, and well typifying the purity of its atmosphere, first greeted our gaze. Ferns from New Zealand, many species of grotesque and interesting cacti, camellias ready to break their emerald fetters, and heliotrope bending under its burden of sweetness, next caught my wondering eyes. Polygala Dalmaisin, its rich crimson on a background of deep green, and tritomas so magnificent in their effects—the gorgeous tints lighting up with the brilliancy of a flame—reminded me of a June sunset on our great western prairies. Pampas grass with its airy, nodding plumes, "shooting aloft in generous rivalry," was dancing in the December sunbeams. Another pretty favorite, so modest in tone and color, is plumbago capensis, a native of Cape of Good Hope, in whose sedate looking blossoms delicacy of style and tint are so prettily blended as to delight the eye; while its healthy, vigorous growth and numerous flowers, speak of its generous nature—don't hesitate, that is the word—some plants are *very* generous, others, like persons, can not always afford to be. Among geraniums, pansies—those motley beauties with faces full of thought—Neapolitan violets in their full splendor of bloom, grew the lantana, a greenhouse shrub in the East, but here flourishing grandly in winter air, laden with its glorious mass of red, yellow, and orange flowers, being succeeded by shining drupes—a very Indian Prince in gaudy costume, swaying above these lowly creatures at his feet. Another sweet child is alaysia, or lemon verbena, a native of Paraguay, so universally esteemed for the delicious fragrance exhaled by its innumerable small flowers and delicate leaves, also growing in the open air. I nearly forgot to mention the rose—queen of flowers in all lands—that in this lovely garden grows in great variety and perfection. A most grateful flower is the rose, repaying a thousand fold the least care bestowed upon it. Order and neatness are distinguishing features of this charming nook, yet everything

seems to have its own pretty way, and upon that way one can suggest no improvement, it is so natural. The same soil that has brought forth so much of the ornamental, has also a goodly portion of the more strictly useful in the shape of fruit trees, including the orange with its wealth of golden fruit, cherries, prunes, pears, plums, peaches, strawberries, etc.

The fact that six years before our visit to this spot the locality bore nothing but rocks and chaparral, excited our admiration quite as much as those more beautiful forms and colors just enumerated. What California—what the whole world needs, is more such taste, more such industry, more such faith and patience, and more such homes, for all are the safeguards of the buds and blossoms of humanity ever coming forth from the domestic nursery to be transplanted in, God only knows, what soil.

O! the flowers, sweet flowers! Plant them everywhere, especially about the home and school grounds, for they are teachers sent from the Infinite One—searchers of our hearts and souls and secret lives, making us by their purity and fragrance long to be like them in our lives and missions—scattering joy and gladness and light athwart the gloom that falls upon all the diverse paths tread by earth's children.

A system of education that does not include the heart and soul with all their spiritual faculties is not deserving the name in its fullest sense. How truly has it been said: "The blessings of the Almighty are diffused through all nature. When she holds them back, the industrious man can force them from her."

Fruit trees are in blossom everywhere.

RIVERSIDE CITRUS FAIR.

By JAMES H. ROE, of the "Riverside Press."

Gallesis, in his treatise on the citrus family, concludes that the ancient Israelites carried boughs hanging full of oranges before them in their solemn processions at the feast of Tabernacles. Something like this is happening in Riverside this week, and to-day the golden orange is enthroned in state, elevated in gorgeous profusion for the admiration of the numerous concourse of people who are thronging to do it honor.

This noble fruit, with its "sisters, its cousins, and its aunts," in the shape of lemons, limes and citrons, is holding a brilliant reception in the public hall here, surrounded by a devoted court composed of committees of prominent horticulturists, and guided as to its policy by the chairman thereof, as its puissant ministers.

The more humble, but very influential raisin, also claims here a considerable share of public attention, displaying a goodly array of well-preserved bunches of saccaharine sweetness in model packing boxes, and suggestive of "Little Jack Horner and his Christmas pie." The raisin in Riverside occupies about the same relation to the orange that Henry of Navarre did to Henry III of France—both are growing up together, tenacious of their rights, but the vine is aggressive, and some think may overshadow the other industry at some future day. The orange is very like a king—more noble, more expensive, more profitable, and more variable than the grape, and has also more insidious enemies. But it will always remain first in Riverside.

To the uninitiated it may seem strange that there should be much to see, or much to talk about in an exhibition of

oranges and lemons. An orange is simply an orange to them, and a lemon an article which can be seen in any grocery window. But the more one looks into this fascinating culture, the more one finds that it is interesting, curious, and instructive. There are, for instance, so many different kinds of oranges. The trans-Rocky Mountain resident knows perhaps that there are Havana, Florida, Mediterranean, and Central American oranges, but supposes that this simply denotes the different countries where they are grown. He knows, very likely, nothing about any further classification, and would be surprised to learn that oranges with the characteristics of all these countries were grown in this settlement, and that there are forty distinct varieties of oranges propagated here, and hardly less than two hundred in the citrus producing countries of the world.

It becomes a question of practical importance, then, to ascertain which is the best of all these kinds to grow for market, and to find out with scientific accuracy what the differences are, and how produced. All the conditions necessary to the production of the most perfect orange and lemon are hence worthy of the most patient study and investigation, and descend from the realm of the abstract and theoretical to that of the financial and practical. It may make thousands of dollars difference in an orange orchardist's income, according to whether he does or does not give due importance to the matter of proper stock on which to bud, and proper bud for his stock; enough, but not too much irrigation; proper amount and right kind of cultivation; suitable location as to soil, climate, and exemption from frost.

One great object of the Citrus Fair just held here, was to compare notes, and to enlarge our knowledge on these topics; and it is the intensely practical nature of these questions which has caused the people of this section to rally to this exhibition with such a steady interest. At 1 o'clock on Tuesday afternoon the doors of the exhibition hall were thrown open, and the impatient throng of visitors and residents were passed in and admitted to a full view of the golden glory of the display. This fruit ripe, and hanging half hidden, half revealed on the tree, is a charming sight; but here, massed in bunches, pyramids, and continuous square yards, the sight may really be called magnificent. The long room fairly glowed with rich yellow color—the eye at first was dazzled, and it was hard to believe that these brilliant spheres would not have illuminated the hall at night without the aid of lamps. Glorious boughs, hidden behind their aromatic load festooned the walls, and trim rows of glass-covered boxes of raisins and jars of lime juice, drums of figs and jars of citron, aided to produce an almost fairy-like effect.

The morning had been spent in giving visitors from abroad a drive through the principal avenues of our 20,000 acres (for we knew many of them had come to "spy out the land"). The violent storm of the preceding three days had rendered the number of these less than had been promised, but a goodly concourse came.

The fruit was mostly arranged on two tables, each about sixty feet long, with a shorter one across the end devoted to raisins and minor exhibits. The oranges, lemons, limes, and citrons, were placed on white plates, usually one half dozen on each, though Messrs. Cover & McCoy of this place had several dozen magnificent Navel Oranges, all from one tree, piled on an immense oval dish,

and attracting much attention. You have heard, doubtless, of a "schooner of beer;" well, this was a steamer of oranges—reminding one of a western river steamboat loaded to the water's edge. Immediately above it hung a cluster of fourteen seedling oranges, of T. W. Cover's, which took the prize. A cluster, in which each orange touches its fellow, is different from a bough, which may contain scores, but only near enough together to strike the eye "en masse."

Passing along, the eye is caught by broad bars of golden color, which prove to be a lot of gigantic seedlings from the orchard of Hon. J. De Barth Shorb, of San Gabriel, flanked by a similar display from Anson Van Leuven, of Old San Bernardino, and the Sierra Madre Villa, near Pasadena. These oranges average twelve inches around, are rough skinned, but very fine looking.

Separated by trailing vines and bouquets of flowers, we find the San Diego outfit, very creditable and extensive; and here was a plate from a point a long way south of the Bay city, viz.: from Panama. They are pale orange color, but very sweet and juicy.

The exhibit of A. B. Clark, of Orange (Yale Orchard), was noticeable for the extreme pains taken in packing for market. Every specimen was wrapped in a separate tissue paper, which has printed on it a description of the fruit. I am informed, on good authority, that the late frost was just severe enough at Orange to kill the scale bug, but not so as to injure the trees. It is not always that Jack Frost is so judicious.

Messrs. Shugart & Waite, of Riverside, had the largest display — thirty plates—each containing a different variety of citrus fruit. Their blood oranges showed the characteristic ruby tinge through the skin, marking them at once for what they were. The influence of stock on bud was here noticeable. A plate containing Mediterranean Sweets was shown, picked from a tree budded on China Lemon. Another plate was shown taken from a younger tree which had been budded from the first mentioned one, but on orange root. The fruit from the bud on orange root was notably smoother and handsomer than that from the parent tree. This is grading up.

Gigantic Pumaloes (Pumpelmous?) graced the tables, looking condescendingly down upon the small fry around them, like a hen upon her brood of ducks. This odd, squash-like member of the citrus family seems to be the same thing as the Citrus decumanus, or Shaddock, but differs from it in being pear-shaped, while the Shaddock of India is round.

Dr. Magee presented specimens of the famous "King" orange of China, which were obtained by Minister Bingham, of Japan, from the Royal Botanical Gardens of Saigon, Cochin China, through the courtesy of the Chinese Legation. These oranges were overripe, and did not sustain their reputation for deliciousness of flavor. The juice cells were very large, and the membrane enclosing the sections extremely thin; the skin of an average thickness, very red in color.

Mr. Richardson, of San Gabriel, cut an orange which had hung on the tree two full years. The stem still adhered firmly to the fruit, and the orange was perfectly healthy. It was, however, over-ripe, and had lost the sub-acid flavor so necessary for prime excellence.

Mr. Garcelon showed a "monster," or hybrid between a citron and a China lemon—as large as a citron, but with a smooth rind, and ends flattened instead of pointed.

Dr. Emory had limes of a pear shape, and as large as a large Lisbon lemon—a "sport" from a seedling. Altogether the display was very creditable to Southern California, and well calculated to aid the progressive orange and raisin grower in his chosen pursuit.

In the hall above addresses and essays were read by Messrs. Shorb, of San Marino Villa; Conger of Pasadena (by Jas. Bettner, in the Doctor's absence); Mosher, of Colton; Holmes and Rudisill, of Riverside. They will be published in the *Press and Horticulturist*. After the award of premiums, on motion of Alex. Craw, of Los Angeles, an enthusiastic effort was made to raise a fund of $1,000 to be expended in obtaining information from citrus fruit growers throughout the world. $350 was pledged on the spot, showing the dead earnest in which our people are, and their determination to be excelled by none in the successful cultivation of the King of fruits.

February 25th, 1880.

THE KAURI FORESTS OF NEW ZEALAND.

By Mrs. C. S. Bracey, North Wellington, New Zealand.

Some time since I was residing in a part of New Zealand not many miles from the Kauri (Dammara Australis) forest. The cottage I lived in overlooked the entrance to the harbor, the hill surmounted with a flag-staff to give notice, by its stretched out arms and colored balls, of the various vessels or crafts piloting their way into the harbor. Far out on fine clear days could be seen the Great and Little Barrier Islands, and nearer the noble Rangitoto Mountain, rising up from the sea with its three peaks, its extinct volcanoes, and its curious flora, all almost inaccessible except to the practiced climber. Afar off, in a different direction, could be distinguished the Coromandel ranges, and numbers of small bays skirted the sea line. A few picturesque houses were dotted here and there with trees around them, and civilization had made great strides in this favored spot.

We often made excursions, sometimes on the water, but at others on horseback, which I greatly preferred. One day we joined a party to the Kauri forest some twelve miles distant, starting in the morning. We formed a merry cavalcade, and certainly our steeds and their riders often caused amusement; one horse in his earlier youth having been a racer, thought it his duty even when a canter was attempted to gallop off at his greatest speed to the immense discomforture of his lady rider, whose companion was left unavoidably in the rear. Another had evidently defective sight, or was of a very nervous temperament, as he twice shied his unfortunate rider off, who having boasted somewhat of his equestrian powers before starting, felt no little aggrieved at his horse's conduct. But though distasteful to the chief actors, these small incidents were amusing enough to the rest of the party as no harm was really done.

After riding up a steep hill, we soon reached a long stretch of desolate, broken-up ground, which had been dug in all directions in search of the precious Kauri gum, largely at that time collected from the ground, where a noble forest of Kauri trees had, in the years long passed away, flourished. A few roughly built Maori huts stood together, men and women in blankets, or loose dirty garments, lying on the ground or smoking short pipes, or, when not too lazy, collecting some of the gum by turning up the earth with a roughly constructed iron spiked tool; but few

trees were to be seen, and those were small and stunted. Occasionally we had a view of the river, running beneath high cliffs, but there was not a house inhabited by Europeans in sight until we had ridden many miles, when we crossed a small gully, and near it stood a small road-side house, for the accommodation of those men who might have taken some of the Kauri land to dig up the gum, but it looked like a miserable resting place. Further on we passed a Maori "pah" surrounded with rough fencing, and occupied by numerous families of Maoris, ugly black pigs, and half starved looking dogs. A few tattered red and blue blankets were hanging on the fence out of reach of the pigs and of the half-clothed children, few of whom had more than one garment on, and that barely covered them. Maori children are an ugly race, though they improve in appearance as they grow up, only to get uglier again as old age approaches.

We still rode on some miles, and at last in the distance saw the dark line of forest. As we reached it the scene changed completely. The noble trees were upright and standing closely together. A large saw mill for cutting up the timber was near, worked by water power from a branch of the river, and there was a comfortable house occupied by the owner of the mill. Here we all dismounted, and the horses were tethered. Gladly they cropped the delicate pasture, after their journey, and the mill owner kindly provided us with luncheon, to which we all did ample justice, and then proceeded to the forest which was only a short distance away. Here the magnificent Kauri trees could be examined singly. Many stood over 150 feet high, with a trunk of ten feet in diameter. The bark was thick and resinous, the leaves oval, above two inches long. Some few trees that had been burned or cut had sap oozing from them, which became thickened by exposure to the air, and hung on the tree resembling a large mass of whitish opaque gum; a few other trees stood here and there, and there were many ferns, but these noble Kauri pines engaged all our attention. The young saplings stood closely together; their leaves were more lanceolate in form, and the branches are more often whorled in these young plants. Sometimes the trees are thinned out to make spars, and masts for ships, for the larger growth of these giants of the forest is extremely valuable for spars, sawing timber, and other purposes.

After awhile we returned to the mill and watched the process of cutting up the timber, the circular saw unerringly doing its work; huge boards were cut, carried off, and as speedily packed to dry. The elders of our party now considered it time to be starting homeward, so after a cup of tea, the constant beverage at all hours in the colony, we remounted and reached home just as the stars began to glisten in the sky, and a moon almost at the full shed its soft silvery light over the glimmering peaks and forest. Each year as immigration sets in more strongly the aspect of these places alters, and where the single house stood in former times cottages now stand in close neighborhood, and what was waste forest ground is even under some cultivation at present. It is said that judging from the size of the pieces of gum that are now dug up from the oldest forests, none of the present standing trees will ever produce any pieces of equal size or weight, and the Maoris say that their ancestors found much larger trees when they came to New Zealand than any which now are on the island.

WHY DOES WATER PREVENT FROST INJURING TENDER TREES?

By GUSTAF EISEN, Fresno, Cal.

In a former letter to your valuable journal I endeavored to give my views upon the subject of frost and water, viz.: on trees and other tender plants. I believe it to be now a fully established fact that water by means of irrigation, if applied in the right time, will considerably lessen frost injuries, or rather prevent them. But in what way does the water act as a preventative? Does it attract the frost as the old saying is, or does it act in some other way? I do not exactly doubt that water, iron, and other such substances does attract frost, but would beg to leave it to physicist to fully explain the process. I am more thoroughly inclined to think that when the water is said "to attract the frost" it rather acts in two entirely distinct and different ways. One way is evidently simply this: that when water is applied in sufficient quantity it, when frost sets in, radiates a sufficient quantity of heat so as to enable itself to congeal, and this radiated heat naturally tends to lessen the frost. I believe, however, that the heat given out is too small to have any real effect except when larger rivers or warm springs are running through narrow and inclosed valleys. In the cases where a wet straw thatch is put about the trees I believe water acts in a different way. The radiated heat must here be infinitesimally small, and could not be taken into account, but the water which constantly evaporates from the straw above the tree acts similarly to a cloud over a valley, and it forms a stratum of vapor through which the warmer air only with difficulty ascends, in other words, it tends to lessen the radiation of heat.

When water is applied by irrigation it acts in a somewhat similar but partly different way. I was led to such a belief a few years ago when I had occasion to set out quite a number of young eucalyptus trees. It was my first experience in planting this kind of tree, and as a matter of course I planted them at the wrong season, the exact date I do not remember, but it must have been in the middle or end of December. The trees were rather too large, the roots were somewhat hurt in transplanting, and the interrupted circulation of sap caused the top branches of many trees to wilt and droop. The ground seemed pretty moist and it looked like rain, so I decided to save a part of the labor in watering the newly planted trees by a watering pot, and let some of the trees care for themselves. That is the way I got my first lesson about frost and water. It did not rain but cleared up and froze quite hard during the night. The next day at noon there was a marked difference in the condition of my trees. Those trees which had been watered had their top branches and young leaves bright and fresh, and were uninjured by the frost. Of those trees again, which had not been watered, some were with erect branches and leaves, others again had remained drooping all the time. The latter ones were badly frost-bitten, and some were killed down entirely.

It seemed now to me pretty certain that water had no action in any way of attracting the frost, or by radiating heat, but simply as stimulating the flow of sap, which again caused the branches and leaves to erect themselves. The flowing sap in the leaves had naturally evaporated through the pores of the latter, and surrounded the plant with a sheath or sheet of moisture, which again acted somewhat in the way of a straw mat in keeping off the frost and

keeping the heat in. And I believe this is chiefly the way the water acted when it saved our orange trees last winter (1878–79). It may also be that the uninterrupted flow of the sap prevented its congealing just as in running water, or in the veins of minute animals, when the body heat is in no way perceptible.

CULTURE OF THE PINE-APPLE.—No. 2.

By Rev. Jas. H. White, Florida.

In theory the time of fruiting is nicely arranged. "Suckers fruit in one year, slips in a year and a half, and the crowns from two to six years." Our first planting was mostly of slips, on new pine land just cleared but badly prepared, and set in August, 1876. In the December following, the only frost I have ever seen here killed most of the leaves but none of the plants. July 20th, 1878, we picked our first ripe fruit, and only about one-tenth of the plants fruited that year. How much the destruction of the leaves put them back it is impossible to tell, but I think many more would have fruited then but for the cold. Crowns and slips planted side by side fruited at the same time.

Our second planting was the offsets of the fruit of 1878, set in September of that year and sparingly fertilized. They are set 2 by 3 feet, and have been well cultivated. Crowns, slips, and suckers, are all now blooming, but what proportion of each will fruit this year it is yet too soon to tell. It may be safely laid down as a rule that whatever promotes the growth of the plant hastens its fruitage, and whatever hinders its growth crowds that time into the future.

The situation calculated to secure the best result is worthy of attention. Low, rich land was the fashion here at first, and some proved that it was costly to follow the fashion. As to slopes we have small margin for choice. High and dry is the verdict of experience.

A former resident of Jamaica says of that island: "Pines grow in all parts of the island, but curious to tell, they thrive best on the south side, the hottest and driest part of the island." Three items tell all that is necessary. The situation must be dry, free from frost, and the best possible exposure to the sun. Two outs and one in—out of the wet, out of the frost, and in the sun. A few may be raised for home use where some kind of covering is necessary to protect them from the cold, but this method is too expensive for a general market crop.

The kind of soil, or at least one feature of it, is indicated above. It must be dry, thoroughly drained either by natural or artificial methods. One writer says, "new, rich land, underlaid with clay." Another, "the soil should be very rich, and if possible it ought to be clay." And yet another, "they will do well on pine land with some fertilizing, but a good deal better on rich hummock land."

My plantation is on pine land underlaid with yellow sand, the first planting without manure, and yet the "good deal better" has not been produced by any of my neighbors, however rich the soil. Many trials have been made by different persons, and failures have followed the planting upon rich black land, rich shell land, and upon coarse soil of any kind. On two points I think all planters agree. No soil is suitable for pines unless it be both fine and dry. I should have said before that this industry is in its infancy here. We are all learners with most of it to learn. Upon many points we need the verdict of extended experience. I think, however, that there is a growing

conviction that our lighter grades of soil with suitable distance will give better results than the better grades however rich. I will give two facts both pointing in this direction:

1st. My pine land without fertilizing furnished the samples sent by the Indian River Horticultural Society to the editors of different papers.

2d. In this vicinity only those who have planted on light lands are making efforts to extend their plantations.

Planting has two divisions. What to plant, and how to plant. Suckers are the largest and therefore the best, because the largest will fruit first. Plant suckers if to be had at a reasonable cost. I think they are worth fifty per cent. more than slips. If one raises his own plants he should sell no suckers until done planting. But slips are the most abundant, most easily obtained, and are the chief dependence for extensive planting. The sale of rooted plants has been quite a speculation in this State, but I think the folly is now nearly ended. Some of my neighbors paid twenty-five cents each for rooted plants and failed to get the worth of their money. The question of rooted plants involve that of transplanting.

A Lake Worth planter (Lake Worth is about one hundred miles south of us near the Atlantic) writes: "We never set out rooted plants. The experience of several here goes to show that they are not so good. We moved eighty good thrifty plants and now they are nearly all dead. The balance do not fruit." My experience differs from his as probably does my method. He does not give his method, but here is mine. I dig up the plants, leave them in the sun a week, or two or three, as is most convenient; then cut off the roots, cut back the leaves, and set them out. Under such treatment I have never lost a plant. Roots for transplanting are therefore at a discount with me, and he who buys them for that purpose "pays dear for the whistle."

How to plant is a double question. How close and how deep shall they be put? On the Bahamas they plant very close. From twenty to twenty-five thousand to the acre is common. They plant so close to keep the weeds down, but no really good fruit can come of such close crowding.

Mr. Robert Thompson, of the island of Jamaica, has charge of the Botanical Gardens of the island. He has given much attention to pine-apples, particularly new varieties. He plants them $2\frac{1}{2}$ by $3\frac{1}{2}$ feet. In this region 2 by 2 is the usual distance. My first planting is 2 by $2\frac{1}{2}$, more recently 2 by 3, and next season I shall plant some 3 by 3. I plant in squares 30 by 30 feet with a space of five feet between them. Nine of these squares make a fourth of an acre. Two feet by three gives ten rows with sixteen in a row, or 176 plants to the square. How deep? has a short answer. Just deep enough to hold the plant in its place until it becomes rooted. I set slips from one to three inches, suckers from three to five inches—the size determines the depth. Both are prepared for planting by cutting a small piece from the base of the plant and removing the short leaves that encircle it leaving the stem naked a half or three-fourths of an inch. This is the usual practice, but I have doubts of both its utility and necessity.

Island Home, Brevard Co., Fla.

Half-Moon Bay farmers are just completing their sowings of flax.

Try to make a compost heap. Use refuse vegetable matter, pile it in a heap, and let it decay.

THE GREENHOUSE IN SPRING.

By Mrs. S. P. Dorsey, Grass Valley, Cal.

Shall we not hope that the cold weather has done its worst, and the beloved plants that have been nursed and cherished so tenderly through the dreary storms of an unusually severe winter, will now be permitted to return, with buds and blossoms, our careful solicitude?

How cheering has been the delicious greenness of the ferns through the dismal time when the winds howled, and the snow-drifts were blown here and there; how they bridged over the chasm of time, when flowers were withholding their loveliness and perfume, and when walking through the conservatory, noting how even then the new fronds were unrolling their graceful coils, they reminded me of the first days of pleasure in the woods and by the streams where "we were first acquaint."

I have lately seen an article somewhere of the best way of getting rid of annoying insects, viz.: by washing them off with a well-directed stream of water from a hose—of course through a sprinkler. I had already found by experience that it was better than fumigating; and by showering very thoroughly twice a week have been able to get rid entirely of these pests. I find that nearly all the greenhouse plants do better when watered with warm water. Callas like it *very* warm, and those so treated have given me finer flowers than ever before.

As a number of my friends have wondered at my success in raising plants from seeds, while theirs "never come up," I will describe my mode: I sow Balsams, Asters, Phlox, Petunias, Pansies, etc., in boxes about one inch in depth, filled with finely-sifted, good garden soil. Cover lightly by sifting the earth directly through the sieve upon them, water well with a fine rose and warm water, place in the greenhouse close to the glass, or in a warm room, covering each box with glass, and keep moistened. In a few days one will be rewarded by seeing the tender green leaves. When the second set of leaves appear, is the time to plant in the garden beds, which are supposed to have been nicely spaded and manured. Some delicate seeds require shading until fairly sprouted. For those not otherwise provided, common soap boxes sawed across twice, will give two good sized seed-pans; two, of course, will require a piece of wood (a shingle will do) nailed on the under side. In planting out, select a cool or cloudy day, and the young plants will not need shading. This plan is more troublesome than putting seeds directly into the garden, but very sure of success; and what flower-lover will begrudge either time or care? Such well know the glow of delight when they find some morning the brown soil broken into tiny hillocks, and in each one a sproutlet peeping forth. Well do they comprehend that the joy is but the beginning of a pleasure that will increase with each new leaf and branch through all the spring; and when the early summer brings the blossoms, with what an enthusiasm will they greet them!—their own flower-children.

February 16th, 1880.

New hop yards are being planted in Alameda, Napa, Santa Clara, and many other counties.

If any fruit trees are received from the nurseries late in the season, though already leaved out, they can be saved by mulching and watering when they are planted.

REMEMBRANCES OF A MOUNTAIN SCHOOL.

By Charles. H. Shinn.

The village of Mabie was in a delightful place, where three cañons met, and the Trinity River flowed past on its way to the Pacific. Mabie was built on a sunny slope, looking south across a black bridge, and over crumbling banks alive with busy miners. The single street wandered past bits of orchard, and gaily blooming roses before the trim cottages, until it passed quite out of sight among the bushes of manzanita. In some places it jogged along quietly, but at least twice, and that in the very heart of the town, it frolicked down into a cross gully, wet, cool, and full of ferns, and then twisted among the willows till it was nearly lost. Sometimes this amusing street slipped shyly around the corner of a miner's cabin, built out of line, and sometimes, as if in pure revenge, it crept over whole vacant lots, and quite surrounded solitary and timid shanties.

The school-house stood in a clump of cedars a little above the town. Near it there was a rocky hollow, dotted with immense bowlders in pyramidal piles, over which clematis and blackberries tangled in bright profusion, and wild roses of delicate pink clung to the rocks. The vagrant street aimed directly for the door of the school-house, but a rocky slope cooled its ardor, and it wandered off into the hollow, so that only a little footpath went across the bright grass to the drooping cedars, and wound around them until it found the three brown steps, and the breezy porch where the sun-bonnets hung in term-time.

School was to begin on Monday, so Saturday afternoon I went to the quiet school-room in order to get acquainted with the surroundings. I stood a moment on the porch, looking over the picturesque village, and across the wide river to the smoky heights, and the soft, moving clouds. Then my thoughts came back to the school-room, so soon to be filled with childish faces, some sweet and pure, some sad and lonely.

Going in, I found a captive linnet who had flown in through a broken pane, and was vainly exploring the ceiling, but perceiving the open door, he whisked out with almost invisible speed. The room was rather out of order, and a little dismal, except for a pleasant ray of sunshine which shone on the teacher's desk.

Now, just as I was standing in this rather dusty place, I heard some one open the gate and come up the walk. A blue-eyed little girl of eight stood by the door and tapped, swinging her sun-bonnet shyly, yet looking up with a cheery confidence that was very winning.

"Well, little lady," I said, with a smile, "so you and I both came to look at our school-house?"

"Yes, sir," the child replied, "I'm Lizzie Baker, and Nellie and I wanted to fix the school-house, so we got Sadie and Maud Willis to help us."

The other three children stood by the gate with mop and bucket. They came in shyly, and we got acquainted. Maud was a dark witch, full of mischief. She stepped on the log first when they crossed the sluice; she jumped from the haymow, and dared the others to follow; she threw gravel at Pat Malloy's calves till he almost grew angry, but could not help forgiving her after all. Sadie was a demure, brown-haired child, always neat, and fond of make-believe plays. "Old Maid" the sarcastic boys called her, at which she smiled bewitchingly, but said never a word.

Nellie was the silent one, dark-eyed, timid, and thoughtful, and "Nellie Baker says so" was the strongest possible argument among the children of the busy mountain town. Lizzie, the flyaway, was a sunny child, full of comic speeches, and she sang like a lark on a pine tree, in the midst of summer, and looking over leagues of shining and beautiful mountains.

Well, we fixed up the school-room, tacked the loose maps against the wall, cleaned the blackboard, banished an ugly piece of rawhide, swept the floor, and put larkspurs and frittilarias on the desk. Then we stood on the porch while the children pointed out the scattered houses of the town and named their owners. But it was late, so they said good-night, and walked demurely down the slope, four solemn young ladies. Before they got half way, however, Maud, the irrepressible, caught her scarlet hood and swung it with an airy cry. The merry contagion spread, and they scampered down, pushing, laughing, and struggling, with perfect good nature, while I enjoyed the fun from the hill. Really these small maidens were as charming as their own native hills.

School began, and went on with its fun and its earnestness, its troubles and its hard work, just as schools always do, I suppose. One day Maud came to me in high excitement.

"O! O!" she cried, "the Indians are coming." Now this sounded like an alarming statement, suggestive of scalping and massacres, but I knew it was only an expected dance, to be given by several of the Northern California tribes. The next noon they entered town in a long array. The men were mounted on spotted cayuse ponies, the women carried bundles and babies. They chose a level place near the river, felled trees, and arranged them in a circle, piling bunches on the outside. Then they raised a cluster of eagle feathers to the top of a pole, and sent a fat boy around to announce that they would dance that night, and wanted the white people to come and see them.

The attendance was large, and the scene was strange indeed. A huge fire was in the middle of the ring, lighting the whole sky with its flashes. The town people occupied one side, in a semicircle close to the bushes. A tall chief stood grave and silent near the fire. Nellie and Lizzie were with me, for their mother was absent, and we were chatting about the funny shadows on the ground, when suddenly the chief began to snap a split willow rod and chant in perfect time. Voice after voice took it up in the distance, coming nearer and nearer, till suddenly twenty warriors in full war paint and feathers, sprang into the ring with a wild and unexpected yell. The chant grew faster; they traced an intricate pattern on the hard ground, stamping wildly, whirling, lifting their shining hatchets, now and then yelling with fierce energy.

So the dance went on for many minutes, and the Indians grew very much excited, till suddenly the strange chant ended, and, facing their visitors, the braves dropped on one knee, silent, and still, and near. It was a curious thing to see those twenty bronze figures motionless in the flickering light. One knelt just in front of us, a sleek, dark, painted villain, and his eyes fairly glistened. Nellie looked very sober, and Lizzie screamed, and clung to me saying: "He looks bad, very bad indeed." The Indian's eyes twinkled, it almost seemed with satisfaction, as if he understood her, and was inwardly amused. Suddenly the chant began once more,

and, springing to their feet, they danced out of sight.

The next dance was a feminine affair. Two long rows of women clad in calico, ornamented with beads and shells, stood in the centre facing each other, and danced backward and forward, bobbing their heads sidewise, lifting their shoulders, and swinging their elbows in a most ludicrous way. Lizzie, reassured, began to laugh. "They look," she said, "as if they wanted to fly, and it hurt when they tried." Each woman had a spot of blue paint an inch in diameter on cheeks, forehead, and chin. I asked the children, who thought this painting was dreadful, whether they had ever seen anything like it before. They thought not; but when I smiled, Lizzie spoke up. "Oh yes, me, at the spring," and looked sober for nearly half a minute. For the four little girls had, on the day previous, got several of the primer class and formed a mud-pie society with much hubbub at the spring, and, when I appeared on the scene, the pies being in the sun, they, with nothing of importance on hand, were comfortably streaking their own faces. Whereat I laughed, and the minxes fled with sudden confusion, appearing when the bell rang, with excessively clean faces, and much averted glances.

The last dance of all was performed by a chosen few in a costume of hides and horns, accompanied with singing and clapping of hands by all the tribes. Then the usher, with his eagle-tipped rod, waved us out, and then they began those secret dances which no white man ever sees, keeping them up till nearly morning.

Lizzie, Nellie, and I, crossed the mining ditch on a broken plank which sagged in the middle, and followed the wandering street, past the deaf shoemaker's' cabin; past Mabie's ruined mill, and Robert's store, and the little hotel on the slope, and the funny walled-up well in the middle of the street; past the wild grapevine on the oak at the corner, and so down the hill to the black bridge over the rapid Trinity River. Then we sat down on a broken wheelbarrow, and talked about the beautiful stars which shone in the clear summer sky overhead. Orion, the belted hunter, and the silver fire-flies, and the sailor's kindly guide. Then we tried a run over the long bridge, and, a little out of breath, we found the cottage, hid in flowers and trees, where I left the children in their mother's care.

The pleasant days blossomed in pearl and rose, and ripened in purple fires above the Trinity Mountains. Each day the children seemed more faithful. Katrina, the German girl, with her two braids of corn-silk hair; Philip, the patient cripple; Duckie, the very small Indian, to whom soap-suds were chiefest of evils; and all the rest of the light-hearted assemblage. My desk was never without flowers and curiosities, brought there for naming, and for quiet afternoon lectures.

When, a little later in the season, the water began to run feebly, and the miners prepared to cease work, the children told me that I would soon be astonished—as indeed I was. For, on the next morning, my desk was piled with fossils and minerals picked up in the empty sluices. As I examined and named each specimen the children buzzed around, giving me the history of each find. There were several ammonites, a number of petrified leaves, acorns, and wood, several fragments and one tooth of a mastodon, a small piece of platinum, the jaw of a grizzly, and, rarest of all, Sadie's contribution, the tooth of an extinct Llama, which proved to be the second of that species

found in the State. So we had materials for many lectures, and the nucleus of a school cabinet. We gave a little evening celebration, and the miners came, applauded vigorously, and promised us the curiosities found in their claims. We had enough money to buy a nice cabinet, with glass doors, which arrived one summer noon, and was escorted up the hill by the delighted children. After this a blushing miner, with his rubber boots yet dripping, would sometimes tap at the door, and hold out a specimen "for the children." Generally, however, the miners preferred to give them to some favorite on the way to school. In this way Lizzie once brought a shark's tooth as large as my hand, and Maud came to school tugging a splendid geode, full of lovely pink crystals.

There was one miner, known as Long John, whose claim had never furnished any specimens, and he was rather worried over it; so one day Nellie came in, looking very happy, and put a lump of virgin gold on my desk. It was an irregular flattened mass, shaped much like an anemone root, and worth, perhaps, twelve dollars. "Long John gave it to me," she cried, "for our cabinet, 'so that some of the gold should stay in Mabie forever,' he said."

Then Duckie, the small Indian, went to some of his wild kindred, and got us a warrior's head-dress and weapons; also household utensils without number —water-tight baskets of grass woven in squares, hollow reeds full of paint, masks for dances, deer calls and needles of bone. Duckie was voted a public benefactor, and we began to study savage history and the beginnings of races and peoples.

Soon our outside work, which vivified all the school life, divided itself into many departments. Some children loved the plants best, and so they brought specimens of woods, leaves, flowers, and fruits. Others studied the formations of rock, and varying soils. One of the boys took a special delight in land snails, of which he made two collections, one for school, and one for home. And they all chased butterflies.

The four little friends were among the most earnest. Sadie collected mosses with delightful ardor. Nellie loved the shy ferns. Maud and Lizzie brought handsful of flowers for the herbarium, and the flower-stands—great bunches of spotted lilies, beaked Dodecathedons, scarlet Mimulus, pink roses, fragrant Yerba Buena, and countless mountain flowers brought to me for a name.

The months went by too swiftly, and the school term drew to an end. The last day came, with examinations, and the exhibition of maps, drawings, cabinet of curiosities, and herbarium. Every one who had helped us was there, and the walls were hung with cedar, the work of the children, whose Sunday clothes hid sorry hearts that day.

Just as the hour for dismissal came the lumbering stage drove up to the foot of the hill, and the little tearful faces clustered round, and the miners gave me their honest hands. "All aboard for Shasta," cried the fur-coated driver. Four sad little girls came up last of all, and I asked them always to remember our beautiful summer, and always to love nature. Then I had to go.

I remember, hours later, just at sunset, as the stage paused on the grade miles distant from Mabie, and hundreds of feet above it, the winds rolled back the clouds we had climbed through, and the setting sun made each peak of snow a carven amethyst, each slope of pine a shining emerald. I looked back, where the wrinkled ravines were knotted

about the shaggy slopes I had climbed so many times before; the busy mines in the yellow cliffs; the rude cabins on the hill; the orchards, and patches of alfalfa, and purple-fruited vineyards along the bends of the stormy river. And I blessed the fair mountain land, the children safe in its shelter, the brave and kindly hearts of the rugged miners who made it their home, and wrested from the grey hearts of the crags their hidden, shining grains of gold.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

WINTER IN THE MONTEREY HILLS.

EDITOR HORTICULTURIST:—From the night before Christmas we had fifty-one consecutive frosts; but I don't intend to give you a list of casualties for fear your Eastern readers would recognize so many of their hardy plants that they would think we had borrowed the north pole for a refrigerator. Probably our warm fall rains are responsible for the great expectations that Jack Frost nipped in the bud.

Despite the cold, I noticed Dodecathedon media, manzanitas, and trillium, in bloom February 1st; violets and primroses on the 10th; and lupines by the 20th; though all in sheltered locations. I was surprised about the 1st of February by the appearance of numerous white and purple striped blossoms in an old can near my greenhouse. As I had never seen the blossom before, and the plant leaves were just pushing their tips through the soil, I did not recognize Saoliopus Biglowii. This plant would make a splendid addition to a cool greenhouse or Wardian case collection. Its leaves, often four inches wide by ten in length, are extremely ornamental, being of a brilliantly dark green, with scattered black spots—keeping their beauty during nine months of the year if in a shady locality. I have found them, however, in full brilliancy as well as sunshine as late as the 1st of August.

We have enjoyed a bit more of "away down East," besides their cold weather, for with my violets have bloomed a lot of Hepaticas (Liver Leaf) from Massachusetts.

J. B. H.

Carneros, March 10th, 1880.

[Carneros is a winding valley situated in the San Miguel sand-hills, in the northern part of Monterey County, on the road from Pajaro to Natividad.—EDITOR HORT.]

WHAT SHALL WE PLANT?

A year ago I should have answered that question by saying "everything that is choice and beautiful," but I have been noting the winter's losses, and am obliged to confess that we do not live in the tropics. Our beautiful banana that waved its leaves in last summer's sunshine is only a melancholy stump; our pet India-rubber tree shows no signs of life; our guavas are among the slain. Fuchsias, Heliotropes, Geraniums, Pelargoniums, Kenneydias, Plumbago, Capiensis, Salvias, and small Maurandia, are laid low. Most of these have life left in the roots and will grow again, and I would not think of giving them up, but there is no beauty to a tree or shrub that is cut down every winter, therefore I don't think I care about a banana or a Ficus elastica, or a guava. I think after this my cry will be roses—roses everywhere. Roses are so eminently satisfactory and so endlessly varied in their beauty that a gar-

den of roses alone would make any home lovely. But we are by no manner of means reduced to that. Clianthus punicens, though somewhat injured, is safe; Oleanders, Deutzias, Wegelias, Camellias, Laurestinus, Pomegranates, Bamboos of various kinds, Loquats, Grevillea robusta, all large lemon and orange trees, are unharmed. Perhaps I should qualify the last remark by saying that the tips of some of the branches of orange and lemon are injured, and very young trees are badly frosted. Of vines we have lost small Maurandias, while the large have survived. The Akebia quinata, which is an evergreen here and one of our most beautiful vines, is entirely hardy and already opening its exquisitely fragrant flowers. The Physianthus alba is somewhat frosted, but not injured. Solanum untouched. Date palm and Dragon palm passed through the winter safely, though the former was last winter badly frosted.

In the greenhouse, where we have always before wintered in safety almost everything without artificial heat, we have this winter lost a great many plants. Coleus are entirely dead. Begonias that last winter bloomed finely are this winter killed to the ground, or nearly so. Bananas have lost all their leaves. Pine-apples unharmed. To our surprise we found the Cape Jasmine (gardenia) endured the winter perfectly in the garden without any protection, and as it also seems to bear the sun it will be very valuable. In the open ground in a corner somewhat sheltered the Libonia has bloomed freely all winter. This makes it a very desirable plant. I would like to know if the Laurus camphora could be safely put in the open ground. Will some of your contributors give their experience about hardy or not hardy plants? L.

BRIEFS OF CORRESPONDENCE.

W. M., Colusa, asks how to propagate pampas grass? Take up a clump in early winter, and divide it into parts, so as to leave some roots to each piece. Then plant them in rich soil, and water well until established.

Types and the natural perversity of things have persuaded the HORTICULTURIST into saying that Dr. Curl had discovered several hundred new plants of New Zealand. Whereas, as we suppose, not having his letter at hand, he meant to say he had collected that number.

There is a new garden being started in Contra Costa County, from which we would like to hear. The gardener to whom we refer used to be at Denverton, Solano County.

Our fuchsia correspondent in Nevada County is mourning over her perished pets, for whom the frost was too much.

San Joaquin information is to the effect that nemophilas and gillias are well out in bloom. The sand-storm of the middle of March was rather hard on the gardens.

We would inform the writer of the Penryn postal that pansies and daisies like shade, and moisture, and that the perennial pea will fulfill her views concerning an ornamental screen.

The owner of a city garden, who wishes to have a showy shrub for people who pass by to look at, is informed the Kennedya alba does well here, and is handsome, and that he might put various sorts of fuchsias along the wall he spoke of.

Los Angeles wants to have a Citrus Fair this month. If so, Pasadena and San Gabriel will come out strong.

ON THE MARGIN OF TAHOE.

EDITOR HORTICULTURIST—Dear Sir: Just as soon as possible I will send you some specimens of the beautiful flowers and ferns gathered in Northern California, and how I found and preserved them. I think I can out climb any grandmamma in America.

I have no work on California Flora, so they are not all classified and arranged. We have been traveling for many years, but are now located. I anticipate much pleasure, when the days come, that I may mount my plants, and unpack and arrange several thousand specimens of queer things that have been picked up in the various rambles of a long and busy life. Please accept many thanks for the magazine—new to me. I like it. This is the fifth number of the ninth volume, so it can not be new to those who stay at home. I have enjoyed everything in it very much. When the snow goes off—we now have about four feet—I shall be ready for each plant as it comes out. I have never been here before, so hope to find many new varieties for my herbarium. I am making every preparation to have nothing to do but work hard, when the warm days come. It is so nice to be satisfied with one's home, if it is new.

I can not write how beautiful it is here. The front door opens to the lake, just a few steps out. Every way you look are forest-crowned, snow-covered mountain peaks, hiding myriads of mysteries in plant life. It seems a long time to wait till showery April. Though this is snowy winter time, it is yet California, and not a bit like the severe Eastern winters. Once the mercury stood for a short time at 8 degrees below zero, and our coldest day was 20 degrees above. But I tremble for the fe tender plants brought from that fragrant sunny South. Getting here so late in the season, and with no chance to properly care for them, they will surely suffer.

These forests of pine, fir, and cedar, are objects for ceaseless admiration, especially after a light fall of snow. Is there anything in magic more enchanting? Quite near the door are several small but thrifty manzanita bushes, heavily loaded with buds for the delicate pink and white waxy bells, whose perfume is promised me by and by. There are many willows and several other deciduous shrubs I can see from my window, but the most are evergreen.

Then the beach is a place of endless happiness. I have been out but three times, but have a fine lot of carnelians; it is hard work to find them, as they are small, and among black pebbles, that I think may be trap, as carnelians are said to be found in trap, but they are the smallest pieces of trap I have ever seen. There are also lava bits of three different formations, pieces of petrified wood, washed smooth by the waves, and four varieties of gasteropods, from the lake. Every one said there were no mollusks here, but I found them.

The days are so sunny and pleasant I can hardly stay in the house. Then the boat, the snow-shoes, the game, the fresh air, and cheerful open fires. After all it is a pleasure to live. The days are not long enough, and the nights by far too short. Nothing is so wonderful, so grand, so never-ending in its perfect pleasure as nature.

Very truly yours,

M. E. O. WOODS.

Castle Keep, Carnelian Bay, Lake Tahoe, Cal.

[This is so much of a picture of the hills that it is full of memories and of infinite suggestions. It should be a sunny, hopeful life to thus be taken to

the mother-heart of the Sierras, far up among the shining lakes, and the trickling streams that melt from the verges of snow, and nurture the soft grasses, the shy blossoms, the delicate ferns, the awakening stems of the snow-white lilies. There are times when, in our forests, among our mountains, the world is like a temple full of numberless shrines. And yet (it is with sorrow that we say it), there are valley-folk and city dwellers who have never seen these things. Is it not forlorn and even pitiful? Sometime, let us hope, they will know better.—EDITOR.]

Selected Articles.

CHOICE HARDY PERENNIALS.

Foremost among the choice hardy perennials, taking them in alphabetical order, are the Aquilegias, many of which are very beautiful, the best, perhaps, being A. cœrulea, a variety from the Rocky Mountains, having flowers of very large size, with large spurs, that give to them a singularly attractive appearance. As a companion plant to this, A. chrysantha should not be omitted, as the blooms, being a rich canary yellow, afford a pleasing contrast with the pale blue of the other. Since the introduction of these two, hybrids have been raised from them, many of which are worth having, but the two kinds just named are so good that it will be a matter for regret if they are not kept true by growers being careful to save seed from plants that are away from all others, from which bees may carry the pollen.

Alstromerias are grand subjects, either in a decorative point of view or for cutting, their small lily-like flowers, so handsomely marked and spotted, being most useful for dressing vases, in which, as their stems are hollow and take up plenty of water, they last a long time in perfection. In order to grow Alstromerias well, they require a well-drained soil and a warm sunny spot, such as a border facing the south, where they can have some slight protection during winter. This is best afforded by a mulching of leaf-soil, or any non-conducting material of that kind that will keep out very sharp frosts, which, if allowed to penetrate the soil deeply, injure the large fleshy roots, and cause them to rot. To establish a bed of these useful plants, it is necessary to obtain them in pots, and if put into the ground now, to plant them six inches deep, which will keep them safe; but in covering, it is always advisable to throw a handful of sand over their crowns, as it is a great safeguard against damp. Alstromerias may likewise be readily raised from seed sown where they are to stand, but plants so obtained do not bloom till they are a year old, and then not very freely.

Anemone japonica and its white variety Honorine Jobert are magnificent border plants that flower most profusely in autumn, commencing early and continuing right on till they are destroyed by frost. The individual blossoms of these are as large as a crown piece, and salver-shaped, the white kind having a prominent green disk, surrounded with golden yellow anthers, which, in conjunction with the purity of the blooms, are very attractive. To give these a fair start, holes should be dug to a good depth, and some rotten manure worked into the soil and well mixed with it before planting, after which the less they are disturbed or interfered with the better they will succeed. A. stellata fulgens and A. sylvestris are likewise very desirable, and both flower in spring. Another plant that should be in every border is Arum

italicum, which has bold handsome foliage beautifully veined with white, and in autumn, when this dies away, there are left standing bare out of the ground numerous spikes of bright coral red berries, which maintain their brilliancy till laid low by the inclemency of the weather. Asters or Michaelmas daisies, of which there are a great many varieties, are, as every one knows, showy border plants, the best being A. alpinus, A. longifolius var. formosus, and A. amellus bessarabicus, the latter having very large blooms of a purplish-blue color. Asters are so hardy and so indifferent as to soil, that they will grow almost anywhere, but they succeed best where they have plenty of depth in which to ramble.

If a fine, hardy, tall-growing, ornamental-foliaged plant be wanted for the back of a border, Bocconia cordata will be found one of the best, as it is shapely-looking, and has handsome leaves of a peculiar tint of green, and the upper surface silvery underneath. Campanulas, too, are striking plants, and particularly C. pyramidalis, which in good soils push up stems to a height of five feet, clothed nearly their entire length with pale blue or white blossoms. C. Van Houttei is a fine hybrid that bears bells quite two inches long, and of great size and substance. Catananche bicolor and alba are very showy and enduring; their flowers being dry like those of the Everlastings, and having long stems, they are very useful in a cut state.

Delphiniums are remarkably fine, D. formosum being a general favorite, and a great ornament to any border. This, and varieties from it, send up massive flower-stems three feet high, and in that condition are very striking.. Like most of the perennials, Delphiniums admit of ready increase by division, and seed sown at once in heat will produce plants that will flower in the autumn. Dictamnus Fraxinella, although very old, is a most desirable plant, forming, as it does, a bush about two and a half feet high, which bears curious-looking red flowers, which are strongly perfumed. There is also a white variety of it, which, except in color, is its exact counterpart. Dielytra spectabilis, as we all know, is quite unrivaled as a spring-blossoming plant, but, unfortunately, it is a little tender in its early stages, and rather susceptible to spring frost, which should be warded off by some slight protection, such as a branch or two of evergreen stuck around it. The Funkias are a beautiful genus, quite worth growing for their foliage alone, which in the case of most of them is strikingly ornamental, being fluted, bold, and elegant in outline. The majority of them, too, flower very freely, throwing spikes surmounted with lily-like blooms, the smaller kinds of which are very valuable in a cut state. Funkias delight in a loose rich soil, and may be easily propagated by division; the best time for effecting this is early spring, just when they are starting, as then the wounded parts quickly heal over. Another very showy perennial is Gaillardia grandiflora, which grows from two to three feet high, and produces numerous blossoms quite three inches across, and these being crimson and orange in color, have a very showy appearance. The readiest way of increasing this remarkably gay looking plant is by means of cuttings of young shoots put in under a hand-light or bell-glass set any where on a shady border, where if inserted in sandy soil they soon strike root.

Geraniums, too, such as G. ibericum and G. sanguineum, which are highly effective, make a fine display, and be-

sides being particularly suitable for any border, are well adapted for rockwork, over which their tops scramble in the most natural manner possible. The old G. coccineum has always been admired for its free habit and great brilliancy of color; but fine as this is, the double variety is much more desirable, the flowers being just as bright as those of the single kind, very large and full, and, instead of dropping when cut, they are remarkably enduring, a property which renders them of much service for dressing vases, where their dazzling scarlet makes them very conspicuous. For rich markings and form, Irises are unsurpassed by any flowers except Orchids, and the wonder is that they are not more grown than they are, especially the choicer varieties, like the Spanish and such kinds as I. iberica, which have only to be seen to be admired. The whole of the herbaceous sorts are very gorgeous; but in refinement and delicacy of color they give place to the bulbous-rooted species, and it is these that should be planted; the present is a good time for doing so, but in committing them to the ground, it is first of all necessary to prepare the positions for them by working in plenty of leaf-mould to keep the soil open; and, to further insure their safety, they should be covered with a good sprinkling of sharp sand, which will drain the water from the crowns and prevent them from rotting.

Monarda didyma is a much neglected plant, but for all that it is one of the most useful and showy that can be grown, producing as it does, numerous whorls of flowers near the tops of the shoots, resembling in form and size those of the Salvias. The scarlet variety when in bloom is a brilliant object, and the white associated with it looks well by way of contrast. Both kinds grow about a yard high, and are well suited for the back of herbaceous borders. These latter would be very incomplete without Pæonies, the tuberous-rooted kinds of which are showy in the extreme, the flowers being as is well known of immense size, and the colors rich and varied. One of the greatest acquisitions among them is P. anemonæflora, which has large outer petals of a bright crimson, the centre being filled with others narrower, golden in color, with a band of crimson running through the centre of each. P. teunifolia is also a beautiful species, and like the others, will thrive almost anywhere, but the blooms being heavy, a sheltered border is the best position for it.

No flowers have been more improved of late than the Pentstemons, which at one time were comparatively small and poor, but now the tubes of the best strains are almost as large as those of Gloxinias, and the markings rich and varied. In order to have a fine show of these most useful autumn-flowering plants, the best way is to sow seed of them at once in heat, and nurse the young plants on under glass till May, when they will be strong for turning out into the beds, or for forming clumps in borders. Phloxes, too, have kept pace with the advanced state of the times, and appear as near perfection as possible; but it is surprising what a difference soil makes with these. When planted where it is light and of a dry character they become starved, and flag; but with depth and plenty of moisture, nothing can surpass in beauty the magnificent heads of bloom which they produce. Now is the time to divide and replant them. I would also suggest the double Pyrethrums, the Statices, and the Spirea palmata.—*The Garden*, London, England.

NEWS FROM FIELD AND GARDEN.

The almond is a good stock to bud upon.

Young wheat in Alameda County is a foot high.

The frost of two weeks ago injured many plants.

Farmers' sons and daughters should study botany.

Near Santa Ana, fifteen acres of hops netted $6,500.

Wheat is looking well in Solano, San Joaquin, Yolo, Napa, and Sonoma.

During the growing season plants require large quantities of water.

Crops on the hill lands of Monterey County are prosperous.

Many new ranches are being taken up in Placer County.

Mr. Wm. Meek, of San Lorenzo, is stocking his reservois with fish.

Chiccory is quite a paying crop on the islands of the San Joaquin.

The frost has injured wheat in some sections by uprooting the late sown grain.

Grapes are being planted extensively in the foot-hills, near the Livermore Valley.

Cultivate the surface of the ground with thorough care and ceaseless patience.

Sheep-shearing is in progress in Kern and Tulare. 40,000 sheep are gathered in one man's corrals.

A twenty acre field of sugar cane has been planted at Garden Grove, Los Angeles County.

The acacias are in full bloom. It is rather a handsome tree, but quite liable to blow over in high storms.

Gardening and sowing seed of hardy annuals is the leading occupation of the month in the northern counties.

Santa Barbara fruit-growers anticipate good prices from the fact that a cannery is to be erected there the coming season.

A. M. Stoddard of Oakland, and A. G. Huggins of Santa Clara County, have planted a prune orchard of 150 acres in the latter county. This is the largest prune orchard of which we have any record. The variety is the Petite Prune D'Agen, and they are to be dried and shipped.

We have a lengthy article on plant life, from Mr. Klee of the University Garden. It will appear in our next number, and our readers will find it an interesting *resume* of some of the facts of vegetable physiology.

Florida Ferns.—In this number of the Horticulturist there will be found an article on ferns, written by Miss Mary Reynolds of Florida. At the same time that we received this interesting and genial article, which only a true lover of the fern-world could have written, there came a package of dried ferns, beautifully chosen, and nicely labeled. They were from the same careful hand. Miss Reynolds is an enthusiastic botanist, and the ferns she prepares for exchanges and collections are admirable. We meant to have given a list of the species she sent, but the ferns are at Niles, and we are here in this noisy old city by the Golden Gate. So we only send greeting and thanks to our Florida botanist.

Editorial Department.

THE GOSPEL OF WORK.

If any man would understand the nature of this world he must first clear for himself a breathing space in the wilderness of shams, and the waste tangles of other men's neglects. Indeed much of one's life is spent in clearing away the results of former ignorance and perversity. We must unravel the wrongly woven web; rebuild the crooked wall; repeal the faulty and foolish law. Daily, hourly, for some one's neglect the world suffers deeply.

A thought unspoken, unacted, has no force. It dies as an idle breath, it fails as the faint morning mist. This much the ages have taught us: that living thought moves with living force, and shapes itself to living deeds. The deathless desire becomes deathless endeavor, unyielding patience, slow, strenuous labor. And this is the everlasting epic of humanity.

This very night, as I write, and this writing is in its way a sort of labor, as also both a duty and a pleasure (which true work always is)—this very moment there are farmers plowing in the fields of the antipodes; children sowing their spring time gardens; hunters climbing Alpine peaks; sailors steering past the cliffs of Iceland; fishers dragging their heavy nets, with song and jest, (if only they *be* heavy). Nearer, in this great city, there are sad-eyed women sewing by flickering gas jets; accountants bending over long rows of figures; printers setting up the morning papers, type by type; midnight editors boiling down the news of the hour; and, in the foundries, where all day long men have been preparing the moulds, there stand, at this hour, dozens of hairy giants stripped to the waist, waiting for the signal which shall bid them tap the furnaces till the red flood of molten iron leaps out in an angry, hissing torrent. It is one network of labor, day and night, in a world-wide environment. Here men forge hammers; there other men wield them in the mines of Nevada, and the gold they find moves the wheels of commerce and builds the palaces on our sunny hills. When we speak of the brotherhood of man it is this that we should mean. The knowledge that we are helping other men should attend every stroke of our daily toil.

FARM NOTES FOR APRIL.

Orchard work is confined to the destroying of weeds. Pruning is over with, and the second plowing of the orchard ought now to be done. In our climate thorough cultivation is essential to success. It will not usually do to sow the orchard in grass, though on irrigated lands we have seen grass or alfalfa grown over the orchard. Without irrigation it is better to devote the whole space to the trees. In rich soil, before trees come into bearing, there may be a few rows of corn or beans planted between the trees. Weeds must never be allowed to grow. At the last plowing aim to leave the surface as nearly level as possible, throwing the soil towards the trees, and then harrowing crosswise.

The Alfalfa Field.—This is becoming an adjunct of many a farm, and its advantages are universally acknowledged. It should be on a level piece of ground, with a low embankment about it, so that when water is used the whole field can be flooded with ease. For the sake of drowning out gophers the alfalfa field should always be near a stream or windmill. An alfalfa patch, properly situated, enables one to materially lessen the numbers of the gophers on

the farm. But the water must be abundant. A gentleman recently told us that on a two acre lot he drowned out over three hundred gophers. A few such hauls materially diminish the gopher crop.

Melon Planting.—It is drawing near the time for the planting of melons. In the warm valleys melons are a great treat in the hot summer days, and every farmer boy should see to it that a good patch is planted. A warm, sunny, sheltered spot is the best. Melons prefer a light, alluvial soil, somewhat sandy, and easily cultivated. Watermelons will thrive on a wider range of soils than will the muskmelon. There are a large number of valuable varieties. In watermelons we have preferred the Early Phinney, the Ice Cream, the Joe Johnston, the small Apple-seeded, the White-flesh Japanese, and the Orange. The rind of the latter has the curious faculty of separating from the flesh quite easily. In muskmelons, among those we have tested, the Early Japan, the Nutmeg, the Large Green, the true Casaba, and the true Persian are worth cultivation. Melons mix quite easily, so that the kinds should be planted some distance apart if good seeds are desired. Plant melons as soon as the frost is out of the ground. At corn planting time is a good rule.

Vegetable Garden.—Sow peas, radishes, lettuce, salsify, carrots, etc., for a succession. Plant beans for snaps, and for late crop. Set out a few tomato plants, and protect them if necessary. Transplant late cabbages and cauliflowers. Incessantly attack the weeds. If showers fall, rake the ground carefully, so as to keep it mellow. Hoe early cabbages in the morning while the dew is on. Sow okra seed in rows four feet apart. Thin to six inches in the row. Keep chickens out of the strawberry patch, for the moral natures of chickens are not as yet well developed.

CALIFORNIA BIG ROOT.

(*Megarrhiza Californica.*)

A recent number of the *Garden* says: "If you were to sow an acorn and it produced a stem like Bryonia dioica, having also a tuberous root below like a yam or sweet potato, the result would be something extremely like the plant we now illustrate. The seeds must resemble in size and shape an acorn when shed from its capsule, and when sown, the germination is rather curious closely resembling that of the Palm or Crinum. The seed coat opens towards the apex, and a stout, neck-like body similar to that of many monocotyledons is protruded. This curves over, and its apex swells into a tuber, the plumule or stem being developed from a niche in the neck or tigellum-like growth as in Crinum. The plant is as yet both rare and curious in gardens, and the credit of re-introducing it rests with Mr. T. Smith, Newry, who has been successful with imported seeds. Even in a young state the plant forms a by no means ungraceful climber, and we trust that some of our American or California friends will tell us something of its growth of flower and fruit in its native habitats."

We think our English garden-folk will find much that is interesting about this plant. It is a conspicuous vine in many parts of California. In the cultivated valleys it is gradually disappearing, as its large roots are often plowed or dug out, and destroyed. These roots attain an enormous size. We have found them weighing fifty pounds. In times of flood they are sometimes washed out by land-slips in the hills, come down the creeks and streams, and are left on sand banks, where some-

times they take root again. The flesh of the root is yellowish, fibrous, and intensely bitter. No animal will eat it. Several patent medicines contain an extract from this root, and small boxes of dried bits of root are peddled about the country as a remedy for dyspepsia, and a multitude of other human ailments. In shape, the roots are generally oval, and four or five times as long as they are thick, but if they grow in stony soil they assume all manner of shapes. Occasionally one will be found which is as round as a cannon ball. The skin is corrugated and of a dark brown color. The crown is several inches, often a foot and a half, below the surface.

The vine is called the wild passion-vine, and it begins to grow from the crown in the earliest spring days, sending out a dozen or more long ungainly branches of a whitish color, which, however, soon have tendrils and leaves, and become quite conspicuous. It loves to cover a wall, fence, bush, or bank. By April the small white, star-like flowers are visible and abundant. Most of the flowers are sterile. In some seasons not a blossom will perfect fruit for miles of territory. Vines growing in sheltered places are most apt to have fruit. The fruit when it first appears is of a very dark green color, but grows lighter as it increases in size. It is round, and covered with spines, at first soft, afterwards quite stiff. When full grown they range in size from an inch to two and one-half inches in diameter. If torn open, the inside is found to consist of a curious saponaceous pulp, extremely bitter, and glossy in color, in which the seeds are imbedded. The skin breaks rather easily. These prickly balls are, with the school-boys of the valleys of California, a substitute for snow-balls. They are gathered with the greatest care, and used to pelt each other with. They usually break at the first blow, and well moisten the luckless recipient.

The stems and leaves die down every winter. We have seen this vine attaining a height of twenty feet in the branches of a tree. It makes a very close shade when well grown, and prefers rich soil, and sunlight. It is usually found in our ravines, in conjunction with wild blackberry bushes, and white morning glory vines.

THE WASHINGTON IRRIGATED COLONY, FRESNO COUNTY.

For years we have been interested in observing the course of colony events in this State. The principle of co-operation in home building is one which appeals to both the reason and the imagination. Men, anxious to better their condition in life, often go out into the wilderness far on the frontiers, hew out homes, and toil patiently on until the wave of progress rolls on and fills in about them, changing empty slopes into fields, fields into villages, villages into towns and cities. But this often takes many long years, and the pioneers' children grow up in ignorance and poverty. It is an evident fact, too trite for more than the briefest mention, that if a thousand of the pioneers scattered along the frontiers of one of the newer territories were to unite their efforts, and simultaneously move into some single valley, or strip of fertile land before unoccupied, there would at once and almost without effort be schools, churches, society organization, and the chiefer comforts of life in older communities. The difficulties and privations of frontier life would be annihilated. Such is the primal thought of the colony plan, which, notwithstanding the strictures of some few newspaper writers, has a great future

before it in California. Here, there being little government land left of value for such purposes, the usual plan is to purchase a suitable tract, bring water upon it, and sell it in subdivisions, laying out at the same time a town at some central point. There are a number of these in California, all of which are worth mention. The Washington Colony, of Fresno County, is one of recent organization, and having lately been favored with considerable information concerning it, we shall chiefly speak of the work being done there.

The tract of land included within the limits contains 7,045 acres. The town site covers 160 acres, and each purchaser of a colony lot receives gratis a town lot 50x175 feet. The land is nearly level, sloping slightly towards the west, and is a beautiful, rich, sandy loam, which does not bake when irrigated. This is an important point.

The colonists already upon the land are contented and happy. They are able to raise two crops, and often three crops a year, and the possibilities seem to them larger than any writer has yet dared to express. They believe in dairying, and have formed a co-operative system, having a factory which will use the milk from 500 cows. They furnish the milk for the season, ten months, pay the manufacturer two cents a pound, market their cheese each month, through a committee, and find the results extremely profitable to themselves. In this way they utilize their luxuriant growths of corn, alfalfa, millet, sorghum, Egyptian corn, and vegetables of all descriptions. Recent figures, from experiments on these irrigated lands, put the profits at $94 50 per cow, providing that she will give three gallons of milk per day. An acre of alfalfa on good land, well irrigated, ought to support four cows. Another outlet is in the grape business, either in raisins or in wine making. An acre of land costs $35, the water tax is 62½ cents per annum. The cost of preparing land, buying cuttings, planting them, and cultivating for three years will be $45. This makes the total cost $81 87. On the other side of the ledger we have a net profit, where the vineyard is in bearing, which is from the third year, variously estimated at from $200 to $400 per acre. A market is offered at the Eisen wine-cellars at $25 per ton.

The colony system offers home life, social comfort, good returns on the investment, and an insured competence to all who take hold in the right spirit. Let us see how much capital one should have. If a man has a capital of $500 he can carry a purchase of twenty acres to a successful termination. Some have had even less to begin upon. One thousand dollars should be ample. A settler should have some knowledge of farming, but he will learn much from his neighbors. All the tendencies of colony life are toward genial and helpful relations of the people with each other.

In the near future, with the drier erected there, the Fresno colonies are probably to become noted for the fine quality of their dried fruits. Canned fruits will also be produced there, and sorghum, sugar cane and cotton are now being tested. The colonists appear to have learned the lesson of union, and they are well organized and alive to their own interests. There is no place in California where more horticultural experiments are continually being tested.

The birds are destroying many peach, apple, and cherry buds. They pick them before the blossom opens.

Editorial Notes.

CONCERNING THE CULTIVATION OF TREES.—Concerning the cultivation of trees and plants there is little room for startling or original theories, but there is much scope for a practical comparison of the actual workings of the different methods of cultivation, at different seasons, and in different localities. Our State is so wide, and its climate so varied, that I have a most profound pity for the speaker who would attempt to extend his own local experience over the whole coast in a dogmatic way. Knowledge is widened; first, by the men who go out and bear the sweat and burden of the day's toil; second, by the men who gather up, compare, and preserve the records of their efforts. The true gospel of this world's progress is written in every furrow made in the new soil of our young realm, in every tree planted and cared for, in every garden, on the wide, windy plains, or in the hearts of the pine-clad mountains, and, though perhaps it seems a far-fetched and incongruous idea, I will say to you, lovers of horticulture here assembled, that we are doing much to develop our State, much to make California a land of art, music, poetry, science, beauty, strength, and progress. If we work here with patience and hope, we shall show men how to have pleasanter homes, and how to have healthier lives. We must not weary in well doing.

It used to be said that orchards in grass were the proper thing. I am not to be understood as condemning this system of no-cultivation for all lands and all climates. But I do not know of any place in California where orchards which have been sodded down to grass or clover have done at all well. My primary statement, therefore, with which I hope you will agree, is that cultivation of some kind is necessary. Of course this costs money. The best orchardists keep their orchards looking the neatest. To this rule I have never found any exceptions, and I never expect to find any. Although I have no figures at hand to give you, still I believe that the gross weight per acre of fruit gathered from a well-managed California orchard is greater than that obtained from Eastern orchards, and I have questioned a number of persons on this point. The soil here is fully occupied with its work. Only in rare and exceptionable cases is it advisable to grow any other crop on orchard lands. The time will come when the trees will require all the nutriment in the soil. Some rich bottom lands will stand it, but it is best to be on the safe side.

The objects of cultivation of the soil are two-fold: first, to destroy the weeds; second, to mellow the soil so as to allow the rains to easily penetrate, and, in later months, the retained moisture to rise. I used to think in my boyhood days that there was a a third object—to keep me from enjoying too much idleness.

Some orchardists hold that in ordinary seasons one plowing is sufficient, followed by a harrow and a drag or roller. In the regions near the bay such orchadists begin to plow in this month, about at the present date, after their other spring work is well out of the way. They throw the soil from the trees, calculating to level the soil by late harrowings. The weeds started by the early rains are drawn under by a looped chain from the plow to the end of the evener. If, after plowing, late spring rains occur, they harrow out each crop of young weeds which start. In many cases an orchard treated in this way will present a beautifully even and clean appearance.

But when the rainfall is very scanty, it appears to me that every drop should be utilized to the fullest extent. Early plowing, by destroying the weeds, which will otherwise draw much moisture from the soil, must in such a case be more judicious. This will, of course, necessitate a late plowing also and the subsequent use of a harrow. Then, also, if a very wet winter occurs, accompanied by what is called warm, growing weather, it may and probably will happen that the weeds in the orchard grow so fast and high that it becomes impossible to plow them entirely under, and they do not decay easily. Consequently, the orchard is left in unsightly condition, and the weeds have drained the soil of much of its moisture. I have seen some sad cases of this kind of neglect. It appears evident that the best way to handle an orchard on most of our valley lands is to plow twice. The first time throw the earth from the trees, and the second time toward them. Plow deeply, and only when the soil is in a workable condition. If it is lumpy, harrow smooth. A revolving harrow with blades, or one with sloping teeth, is valuable in the orchard. The important points are these:

1. Destroy weeds without mercy. Don't be sentimental about a weed until after you have cut it off.

2. Leave the surface nearly level, but keep the soil well about the collar of the tree.

3. If there is a shower in summer, start the harrows, and mellow the surface before a crust can form.

4. Use only the best of tools, keep them in the best of order, kill weeds by horse power all you can, and keep active, medium-sized horses for work in the orchard.

5. Trim trees so that horses can walk close to the trunks.

We must all of us have noticed the curious way in which the type of weeds in any given orchard changes. I know an orchard in Alameda County in which years ago the predominent weeds which sprung up every winter were mallows, pig-weed, and wild mustard. In the course of six or seven years' tillage these in part disappeared, and the low-growing chick-weed was the pest. Within the past few years this has been cultivated out, and now there is only a short grass with occasional clumps of wild turnip.

There are patches in garden or orchard at times which have fallen under the dominion of perennial pests such as the wild morning glory. Such or-

chardists have our hearty sympathy, but we bid them take hold by ceaseless, persistent cultivation until they destroy these enemies. — *Read before the State Horticultural Society, March 26th.*

New Varieties Needed.—The interesting notes on American roses, which we present elsewhere, suggests that there is a vast unexplored field in this direction. Multitudes of new species may be originated if only patience and energy are devoted to the task. California ought not only to be a land of roses, but also a land of new varieties of roses originated here under our warm sun and in our clear atmosphere. Most of the best roses now come from Lyons, in France. Perhaps fifty years from now they will come from San Diego, Los Angeles, Santa Barbara, Riverside, and the Ojai Valley.

Field Fungi Fitted for Human Food.—Justin P. Moore, at a recent meeting of the Academy of Sciences, gave an interesting account of the kinds of edible mushrooms. This lecture has already been printed in the daily papers, and proved a timely discussion of a very interesting topic. Mr. Moore spoke of the *Agaricini*, of the *Polyporei*, of the *Hydnei*, of the *Eveltacei*, of the *Clavarei*, and of the *Trichogustres*, these being the orders of edible mushrooms. Of the first, or gill-bearing mushrooms, there are 42 species in the vicinity of San Francisco. One of the best mushrooms is agaricus procerus. Another, a beautiful little yellow mushroom, is known everywhere as the Chantarelle, botanically termed the *Cantharellus cibarius*. Of the second division, *Boletus edulis* is of high repute. Of the *Eveltacei*, six edible species are known on this coast. As regards the economic value of mushrooms it is stated that in the vicinity of Paris 70,000 pounds are daily produced, yielding nearly $2,500,000 per annum.

A New Vegetable.—Some Eastern seedsmen are offering seeds of a new vegetable from Brazil, in which country it is extensively used as an article of food, both raw and cooked. The fruit is used. It is to be planted on light warm soil, and treat like melons or tomatoes.

American Roses.—H. B. Ellwanger, of Rochester, has the desirable faculty of contributing peculiarly valuable monographs to the annual meeting of the New York and other horticultural societies. At the last meeting he read a paper on American roses, from which we shall quote, condensing freely:

Two roses, the Prairie and the Noisette, have originated in America, besides many varieties in other groups. The Prairie Rose (Rosa rubifolia), is a native of this country. Seeds were first sown about 1836, and were fertilized by other roses, and Baltimore Belle and Prairie Queen were the results. Other popular varieties have since been produced, and their hardiness and vigorous habits make them of great value. Mr. Ellwanger thinks that further developments of this valuable class should be made. We might obtain a race of hardy climbers combining the good qualities of the Hybrid Perpetual, the Noisette, and the Prairie Roses. The example of Mr. Henry Bennett, of England, is cited. A few years ago this gentleman commenced a series of experiments with roses, cross-fertilizing among the teas and hybrid perpetuals. He has in this way founded a new and important class—the hybrid teas. This same sort of skill and enthusiasm applied to American roses would produce a class of hardy Remontant climbing roses.

A long list of prairie roses is given, but the most valuable are the Anna Maria, pale pink; Baltimore Belle, white with blush centre; Gem of the Prairies, rosy crimson; Mrs. Hovey, pale blush; Queen of the Prairies, bright rosy red; and Triumphant, deep rose. None of any value have been produced since 1850. The Messrs. Feast, of Baltimore, and Joshua Pierce, of Washington, have produced all the varieties of value.

The Noisette or Champney Roses were originated in Charleston. The first varieties produced the flowers in large clusters, but through hybridization with the tea section this tendency has been lost. The Noisettes are yellow, pink, or white, but doubtless the same shades which are found in the Hybrid Perpetuals might be easily produced.

[The Noisettes are a valuable class, and we commend them to the attention of our Pacific Coast rosarians who would like to produce new roses of interest. Hand-fertilization will be found to offer the best opportunities for improvement.—Ed. Hort.]

Among the valuable roses of the Noisette class Mr. Ellwanger mentions America, Isabella Gray, and others. Among the roses of American origin in other classes are, among the Bourbons, Charles Getz, George Peabody, Oplitz, Renno, and Setina; among the Hybrid Perpetuals, are Charles Cook, President Lincoln, and Madame Boll; among teas, American Banner, a seedling from Bon Silene, but striped, Cornelia Cook, Desantres, Isabella Sprunt, and President. Also an American rose of value is the James Sprunt, a sport from Agrippina.

The Harvard Botanic Gardens.—We have received Prof. Sargent's report upon the condition and progress of the Harvard Botanic Gardens, and this gives us an opportunity to note its progress. The collection in August, 1879, consisted of 5,901 species, representing 1,519 genera. Of these 3,641 species are hardy. The rest require protection during the whole, or a part, of the year. The important features are the 247 species of Orchids, 387 species of Ferns, 42 species of Selaginellas, 583 species of Cacti, and 583 species of trees and shrubs. The grasses, hedges, rushes, and similar plants are now being added to the collection, and this will increase it to about 9,000 species. Prof. Sargent's connection with the gardens having ceased, it is proper to synopsize his work. In 1872 he took charge. There

were then about 2,000 species of plants represented. They were not labeled, were without order or arrangement, and were practically useless for purposes of study. The whole garden has now been fertilized, the plants arranged in a regular sequence, so that allied plants are close to each other, and all have been well labeled. In common with most similar establishments the Harvard Botanic Gardens have developed a system of exchanges of seeds and plants extending to every part of the world. During 1879 these exchanges reached the total of 19,410 plants, and 4,467 packages; this is a better showing than the exchange report of the Kew Gardens, which in 1878 exchanged 15,206 plants, and 3,702 packets of seeds. The Harvard arboretum is also a most valuable department of the Gardens. It has done much good by disseminating knowledge about arboriculture, and on this ground the Massachusetts Society for the Promotion of Agriculture have contributed an annual grant of $2,500. In thinking of these prosperous and successful gardens, the best in the United States, kept up, too, in a rigorous climate, and under difficulties of climate to which we of California are strangers, we can not but feel that the effort to establish a Botanic Garden here ought to be made. We can, with proper care, begin and maintain a useful and interesting collection, where tests of new and promising plants might be made, and where students might study the relationships of the vegetable kingdom.

American Varieties of Fruit.—In Mr. Ellwanger's recent address he enumerates some of the valuable fruits which have originated in America. Among apples he mentions Jefferis, Sherwood's Favorite, Baldwin, Jonathan, King, Newtown Pippin, Northern Spy, Peck's Pleasant, Rhode Island Greening, Wagner, and many others; among pears are Clapp's Favorite, Frederick Clapp, Tyson, Howell, Seckel, and Sheldon; we have originated among plums Duane's Purple, Imperial Gage, Jefferson, Washington, St. Lawrence, Yellow Gage, and others; and in peaches we lay claim to Alexander, Amsden, Waterloo, Briggs' May, Crawford's Early and Late, Morris White, Old Mixon Free, and many others.

Destroying Slugs.—The English use bran placed in small piles about the garden. Slugs seem to delight in this material, and they crawl from a great distance to hide in it, when they can easily be gathered up and destroyed. Please try this, some of you who have been worried with slugs, and are tired of the quick-lime system. Try it, and report progress.

Cyperus Textilis.—M. Caille, head gardener of the botanic garden at Bordeaux, has lately made known a new plant from Japan, whose culture is simple, and whose leaves make an excellent ligature. It has been known in botanic gardens twenty years as Cyperus textilis; it was discovered by Thunberg, a Swedish botanist. It is essentially aquatic, and so vigorous that at Bordeaux, where it is planted in ordinary soil, it reaches a height of more than a metre and a half. It is prudent to cover the plant as great cold approaches. The stems of Cyperus textilis cut in November are kept in a dry place till they are wanted, then soaked an hour in water and used entire or split lengthwise. These leaves are supple enough to knot like cords. The Cyperus textilis reproduces by seed sown in fine, slightly damp earth, by cuttings, or by young shoots which appear at the base of the leaves in the month of August.—*L'Illustration Horticole.*

New & Desirable Plants.

[We shall glean from our exchanges and correspondence, notes on plants either new, or of promise in our climate. Our nurserymen are invited to send notes on any interesting plants received.]

Calochortus Benthami.—This little Calochortus is a close ally to C. elegans, which is pretty well known in English gardens, but differs in having yellow flowers. For gardening purposes the species of this Macrodenus section are not so effective as the larger, more open-flowered Mariposas, such as venustus, luteus, citrinus, and splendens, but the flowers are less fugitive. The present species is an inhabitant of the Sierra Nevada Mountains, and was first gathered by Hartweg. It is the plant named C. elegans var. luteus, by Mr. Bentham in his "Plantæ Hartwegianæ." Living plants of it were sent to Kew by Mr. Elwes in 1877. The yellow flowers have a blue centre, and are about one inch in diameter, several being borne together on a slender one-leaved scape, rising from six to twelve inches above the ground.

Kniphofia Carnosa.—This plant, Herr Max Leitchlin states, is unique, and different in shape and habit from the other species. It is a native of Abyssinia, and was sent to Europe by Schimper. It forms several low-spreading leaf rosettes, from the midst of which rise the flower-stalks to the height of one foot, producing a completely cylindrical flower-spike about three inches long and one and a half inches broad; but the comparative smallness of the flowers is compensated for by their glowing apricot color, which is made still brighter by the protruding bright yellow anthers, laden with pollen. It is a lovely and striking autumn plant.—*Florist.*

Arisæma Utile.—A very striking species of this remarkable genus of Aroids, common in the forests of Sikkim at elevations of 8,000 to 12,000 feet, and flowering in May and June. It is one of the few Aroids having male and female flowers on separate plants, and only the male spadix is represented in the plate quoted. Arisæma utile has received its specific name in reference to its tubers being collected for food by the hill tribes of Sikkim, but it is also

a very singular ornamental plant. The tubers are about the size of large walnuts, from each of which spring a pair of leaves borne on stout stalks nearly one foot long. The blade is divided into three separate broad leaflets, with red veins and wavy margins. Between and shorter than the leaves rises the wide dull brown spadix, which is ribbed and diagonally barred with raised green veins. The lower part is tubular, and the upper broad portion is curved downward over the orifice of the tube, projecting and hanging from which is a slender thread-like body about six inches in length. This is the attenuated end of the spadix. In other species of the Arisæma the spadix is short and stout like that of our native Arum, and the spadix is prolonged in the form of a slender tail. A. utile was first discovered by Sir Joseph Hooker, and it is the plant mentioned by him in his "Himalayan Journals," Vol. II. (p. 49); but it was Mr. Elwes, of Cirencester, who introduced it a few years ago.—*The Garden.*

The Senecio japonicus *alias* Erythrochæte palmatifida is one of the most striking of ornamental composites. Grown as a specimen plant on a lawn, or in a conspicuous place in the mixed border, it would make a fine object. The handsome palmatifid root-leaves have long petioles, and the stout scapes, which are about four feet high, bear lax panicles of large golden-yellow heads, sometimes as many as eight or ten on a single scape. This Japanese perennial requires a good rich soil, and a rather moist position for its full and vigorous development. —*Florist.*

Nepenthes Bicalcarata (Veitch).—One of the handsomest and most distinct of all the Pitcher-plants yet introduced. It may be at once distinguished from any other by the singular pair of spurs which project from the base of the lid of each pitcher. The specimen exhibited bore several pitchers of medium size, but the dried native specimens also shown were considerably larger; in fact, as large as any introduced kind which have the same form of pitcher. The fuller colored pitchers are of a rich russety-red tint, which renders them very attractive. The leaves, moreover, are remarkably large and handsome, native specimens being nearly three feet long, and unusually broad in proportion, their cheerful green and glossy surfaces resembling those of some of the large leaved kinds of Ficus. It is a native of Borneo, whence it has been introduced by Messrs. Veitch through Mr. Burbidge a year or two ago.—*The Garden.*

Reviews and Exchanges.

The *Florist and Pomologist* for February is a great pleasure to its happy recipients. It contains two colored plates: one of two fancy Auriculas, Captivation and Picotee; the other of a gorgeous scarlet Rhododendron, the Prince of Wales. This number has articles of interest on Pelargoniums, on Vines and Vine Culture, on Poinsettias, on Suburban Gardening, and various minor notes.

The Villa Gardener. February, 1880.

In Illford, England, there is a floricultural monthly under the above title published, and it is one of the most charming of garden gossips we have ever become acquainted with. Each number contains 48 pages, neatly bound in lawn-like green, with symbols of spring and summer on the cover. It has clear, neat type, and pleasant pictures. The several departments most conspicuous are the Flower Garden; the Fernery; Stove and Conservatory; the Fruit Garden; the Kitchen Garden; Notes for the Month, and many contributed articles. It is an enjoyable table of contents. The full address is *The Villa Gardener*, office 130 Salisbury Square, Fleet Street, London, E. C.

The Rose Garden of Oakwood.

Such is the title of a catalogue printed by a gentleman of Cincinnati for private circulation among his friends. It contains a list of roses grown in this gentleman's garden, classified with much care, and the list is an extensive one embracing select French and English varieties. We should like to see some of our wealthy amateurs do something of this sort Rose gardens are truly delightful.

The American Entomologist. February, 1880.

This is the second number of a neat and valuable monthly. The editors are Chas. V. Riley, Washington, and A. S. Fuller, New Jersey. The price is $2 per annum. It has a field, and will doubtless live and wax strong. In the present number Prof. Bessey, of Iowa College, writes on "The Seventeen-year Cicade;" we are given President Lintner's address on "Entomology in America in 1879;" H. G. Hubbard spends two days collecting in the Mammoth Cave, and Prof. Riley discusses "Two Valuable Insecticides."

Catalogues, etc., Received.

McLean Co. Nurseries. Normal, Illinois.

Bulbs and Florists' Supplies. J. C. Vaughan, 45 La Salle Street, Chicago.

General Catalogue of Vilmorin & Co., Paris.

H. W. Williams & Sons, Wholesale Catalogue of Plants. Batavia, Illinois.

Storrs, Harrison & Co., Wholesale Catalogue for 1880. Fruit and Ornamental Trees. Painesville, Ohio.

B. K. Bliss & Sons' Trade Catalogue. 34 Barclay Street, New York.

Catalogue of Small Fruits. John P. Moore, Concord, Mass.

Bloomington Nursery Wholesale and Retail Catalogues. Bloomington, McLean Co., Ill.

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Contributed Articles.

IRRIGATION IN CALIFORNIA.

From an Essay by F. W. SUMNER, of San Francisco.

There is in this city a club whose members, mainly young authors, lawyers, and business men, devote one evening each month to discussions of social, literary, and political topics. At a recent meeting the subject was "Irrigation in California," and the essay upon this topic was a plain and practical presentation of what appears in very truth to be the most important problem now set before the people of our State.

This essay was so interesting to those present that we regret our inability to print the whole of it. It is necessary, on account of the limited space at our command, that we should condense a portion, but we shall aim to preserve the meaning of the writer.

Mr. F. W. Sumner, the essayist, starts out with a careful statement of the conditions of the problem, whose solution is of such vital importance to the people of the great central valley of our State. Though acknowledging the desirability of irrigation over the most of the valley, he devotes himself more particularly to the region south of the mouth of the Sacramento. The Great Valley of California extends from Redding in the north, to Kern Lake in the south, a distance of 450 miles, with an average width of 40 miles. It contains 18,000 square miles, or 11,500,000 acres, a territory equal in extent to the combined areas of Vermont, Massachusetts, and Connecticut.

Says Mr. Sumner: "These plains reach out from the eye in long, dead levels, so flat that in many instances only the instrument can determine the slope. Away in the distance the horizon is lost in the clouds, and the vastness of the plains is like the broad sweep of the ocean.

"They are grand in their monotony. As the traveler moves into the valley the hills and familiar landmarks recede and are lost from view, and he may believe in truth that he is out of sight of land. For eight months the sun pours vivid rays over the prairies, and as the summer advances the landscape becomes warm and brown, the radiated heat quivering in the air, and the atmosphere tremulous with the mirage and reflected lights.

"From the Sierras, with their sources in the cañons and white crests of the range to the Sacramento and San Joaquin in regular succession, flow a score of rivers and large streams. In ordi-

nary seasons they carry steady volumes, but like all water courses which depend on winter supplies, they often widen to dangerous freshets, or through the influence of a dry season are dwarfed to the smallest streams. Some in fact then perish above their mouths. Following the rule for streams flowing any distance through level lands, several are raised above the valley. This is particularly true of the Sacramento, whose level is in many places higher than the neighboring plains, and at or near Colusa the valley is twenty feet lower than the surface of the river. From the Coast Range also a number of crystal creeks and brooks find their way to the lower lands, but only during wet seasons does their discharge pass beyond the foot-hills. All these streams and rivers are, however, the prime factors in any question of irrigation, and to express their value the following table is offered as showing the drainage or catchment area:

	Square Miles.
San Emidio	650
Agua Caliente	461
Kern River	2,382
Posa Creek	278
Tule River	446
Kaweah River	608
San Joaquin River	1,630
Fresno River	260
Chowchilla River	303
Mariposa River and Bear Creek	248
Merced River	1,075
Tuolumne River	1,513
Stanislaus River	971
Calaveras River	389
Mokelumne River	573
Dry Creek	208
Cosumnes River	589
American River	1,889
Coon Creek and branches	484
Yuba River	1,329
Feather River	3,393
Sundry small streams	1,600
Kings River	1,855
Los Gatos Creek	420
Caulua Creek	164
Panoche	455
Putah Creek	584
Cache Creek	1,024
Small streams	1,722
Total	27,503

"Much of this area lies above the plain. The foot-hills and mountains are drained without much loss from percolation, while in the valley the precipitation, if of small amount, is evaporated or finds underground channels. It is impossible to calculate correctly the amount of water which these streams discharge into the drainage basin, as no continuous and accurate measurements have ever been made. The report of United States Irrigation Commission gives some data derived from the gauging of the daily discharge of Kern River the latter part of May, 1873. This discharge was equal to a precipitation of one and one-half inches over an area of 2,400 square miles.

"Using these figures we shall find that the aggregate volume of water poured forth from these streams, supposing it to be equivalent to a rainfall of one and one-half inches over an area of say 24,000 square miles, would be a daily discharge of 2,777,050,000 cubic feet. In volume this is equal to a river 400 feet wide, 18 feet deep, and flowing at the rate of $4\frac{1}{2}$ miles per hour. It is sufficient to cover 2,304,000 acres with ten inches of water each month. This amount would be sufficient to irrigate only a part of the San Joaquin, but the surveys already made declare that enough water falls on the water sheds to amply irrigate the whole valley below. To insure this, however, it would be wise to build catchment reservoirs, and to rely partly on utilizing the drainage.

"There are two mountain chains shutting in the valley. The Sierras are from 75 to 100 miles wide, and their western slopes vary from 100 to 250 feet per mile. At the crossing of the Central Pacific the mountains rise to a height of 7,000 feet, but further south the giant peaks of Tyndall, Whitney,

and Lyell toss their white crests into the transparent ether, 14,000 feet above the sea, presenting some of the most sublime mountain scenery in the world. The Coast Range on the west of the valley is almost as broad as the Sierras, but only rises to an altitude of 4,000 feet, and is almost devoid of timber on its eastern slopes.

"The rain clouds break on the western sides of each range, but the eastern faces are comparatively dry, and therefore the streams on the eastern inclines of the Monte Diablo range rarely reach beyond the foot-hills. Towards the north the precipitation is great, but in the south it is less and less in amount. In the mountains the rain-fall is generally of an average, and in the high altitudes—great bodies of snow—the natural store-house of rivers are found, but on the plains the rain-fall varies, and the records which have been kept for the past ten or fifteen years show a different result at almost every point of observation. From several sources I find the following statistics as showing the average fall of rain at the different localities :

	Altitude.	*Inches.*
Fort Redding, feet	674	29.1
Chico	150	17.7
Marysville	76	19.5
Colfax	2,421	30.8
Auburn	1,363	17.6
Sacramento	54	19.6
Stockton	23	16.8
Vacaville	100	24.2
Benicia	183	22.9
Millerton	402	24.5
Visalia	..	9.5
San Francisco	22	21.5
Merced	..	10.5
Bakersfield	..	10.5
Red Bluff	..	21.5

"Yet these figures are not correct except for the actual point of observation. The meteorological records present strange characteristics, and the results at one point are totally different from those of another only a few miles away. The northern portion of the valley as a rule has enough rain-fall, but not the southern counties.

"The soils which lie between the foot-hills of the two ranges of mountains, although perhaps once similar, now present marked features, and may be classed under four heads :

"First.—The delta lands of the several rivers, but especially those of the Tulare Valley. These at first will take an immense quantity of water, but when finally saturated will be content with a minimum supply.

"Secondly.—The shallow soils of the plains. These will always require a large amount of water, for as they can be easily wetted constant evaporation from a small depth dries them rapidly. They will demand a large amount of water.

"Thirdly. — The deep sandy soils which will claim a liberal portion, and many of these tracts can not be successfully irrigated until a grand system shall be established and in operation.

"Fourthly. —The adobes. At first these lands will take a large share of water, but afterwards will require only small amounts from time to time.

"These classes of soil are to be found throughout the valley, but not all the lands can be successfully irrigated and worked, for some are actually worthless, and others will lie above the surface of the canals. I have spoken of the levels of the valley, but these great plains are some of the most level known to geographers, and remarkably well adapted to irrigation. They may be classed as four great divisions, two north and two south of the mouth of the Sacramento River. The two northern are separated by the Sacramento and the two southern by the San Joaquin, and of course all streams flowing over them lose themselves in the two dividing rivers.

"Redding is 556 feet above tide

water, and Kern Lake 282 feet. This would give a total slope of 838 feet in 452 miles, an average of less than two feet to the mile. In the San Joaquin and Tulare plains the slope is only one foot to the mile. Of course this only expresses an average. The surveyor's instruments bring out some important exceptions. East of the San Joaquin, near the foot-hills, are the 'hog-wallow' lands, remnants of old glacial action, and near them are billowy, rolling lands, used for pasturage. These can be successfully cultivated, but the time must be in the far future when the most desirable districts shall have been brought under control, and successfully worked.

"Deducting the 'hog-wallows' and billowy lands from consideration, there remains the valley on the west side of the San Joaquin, and from one-half to two-thirds of the valley on the east side. These surfaces are almost unbroken, and the instrument is often necessary to determine the slope. The valley north of Suisun is a rich and fertile campaign, and almost all portions are within the reach of possible canals. It must however be understood that the practice of continuous irrigation will tend to reduce inequalities of surface, and at last all of this great valley will be within reach of the flowing water.

"I have now noticed the most important characteristics of the country. In considering any complete system we must plan, not only for the present generation, but for the future. The system of canals used should consist first of four grand canals, skirting the base of the foot-hills, on each side of the valley, extending to tide water in Suisun Bay. Two of these canals would begin near Red Bluff, on the Sacramento; the other two would find their sources in the streams which flow into Kern and Tulare lakes. These latter would empty into tide water near Antioch. From the main canals, at right angles, would flow secondary channels, and discharge into the San Joaquin and Sacramento. These secondary canals would be divided and subdivided into a perfect net-work until the whole country was watered.

"Minor canals flooding the small and fruitful valleys of the foot-hills would complete the work. Such in rough outline is a sketch of a system of irrigation for the great valley of California, and such a scheme can be carried out. Many difficulties, it is true, lie in the way, but all can be surmounted. From 1850 to 1872 there had been constructed in California 5,328 miles of flumes and mining ditches, which lost in the aggregate more than $15,575,000. Most of these works were built for returns which were more of a speculative nature than could be the result of an irrigation venture, and if such an amount could be spent to fertilize the thirsty lands, the returns from such an investment would be many fold. Many circumstances favor cheap construction. The land over which the canals are to pass are easily worked, and the cost of building is reduced to a nominal figure. With few exceptions there would be no cutting in rocky ground."

Mr. Sumner then advocates a general supervision of this work by the State, and goes into a lengthy review of the systems of irrigation used in Spain, Italy, and India, together with estimates of their cost and advantages. He then suggests that, in this State, we need a Commission of men of the highest standing, and a Board of Irrigation of the best engineering talent. An exhaustive survey of the great valley should be made, and plans mapped out with reference to fifty or seventy-five years of labor upon their carrying out.

"All canals and all works for the present and for the future should be built in strict conformity to this plan so that ultimately they would become portions of a uniform and complete organization. The State must have direction, for such an extended detail must be managed by one head. But the State can not immediately construct such works as are required, as the cost would drain the treasury, nor can they be built by the State or Federal Government of to-day. Our present political condition would prevent this, and besides our public works are not undertaken for results which shed benefits in the time of future generations. If we are to have canals they must be built by the corporation, and the State must hold out certain considerations that will initiate, assist, and carry out the work.

"By extending indirect aid, canals could be built, the system extended and elaborated, until at length the great valley would be measured by greal lines of flowing water, and luxuriant acres, which would blossom like a garden. Our Legislature could offer inducements to a corporation which would be organized for the purpose of building a canal over a certain section, and these inducements would be :

"First. — A company to be formed and incorporated for a term of from twenty-five to fifty years. The organization and management to be regulated by necessary legislative acts on irrigation and irrigating companies.

"Secondly.—In order to settle questions which would arise on taxation, the first assessment for taxation should be liberal to the company, and continue in force until the completion of the work, or say ten years.

"Thirdly. — The company to issue stock for capital subscribed, and bonds to an amount which would be specified. The bonds to bear interest at eight per cent. per annum, and the payment of interest to be guaranteed by the State for say ten years. The payment of the guaranteed interest to be made only when the company through ill success or unforeseen contingencies could not meet its obligations.

"Fourthly.—At the end of the time of incorporation, the canal and property of the company to revert to the State, the company to receive for the same a sum equal to cost or amount expended in construction.

"In order to build canals or a system of canals, money must be had, and capital can be attracted if the security is approved and the interest assured. Investments can be easily obtained on the guarantee of the State. And such a guarantee would be sufficient to carry forward an enterprise until it was on a solid and paying foundation. When the works of a company should be finished and in operation the income from the sale of water, water-power, tolls, etc., would pay dividends.

"At first the State would pay out sums for which there would be no immediate returns, yet in such a case we should consider the consequent growth of population, and the increase of assessable values. A policy which should protect and encourage an irrigation scheme would tend gradually to build up a common prosperity, and this very prosperity would add to the welfare of the State, showing eventually a profit.

"The energy displayed in fostering works of irrigation, as they are to become an important part of the economical wealth of the State, can not be misplaced. For instance, we may suppose a canal company to be formed and incorporated as suggested, and 30,000 acres to be placed under irrigation. The capital required and the amount

necessary to be expended would be about $350,000 to $400,000. The present value of the 30,000 acres is about $100,000, and the value after the water would be placed over the land about $700,000.

10,000 acres worth $40 per acre.....	$400,000
10,000 acres worth $27 50 per acre....	275,000
5,000 acres worth $5 per acre.....	25,000
25,000—30,000 acres worth.....	$700,000

and such a valuation would be based on the interest or income of the land. The company might issue $250,000 of bonds to obtain the necessary funds for construction, and on this, if the State should be obliged to pay the guarantee interest for the full term of ten years, it would amount to $200,000. This is supposing the company could not meet its obligations.

"On the other hand, as soon as the canal was in successful operation, the adjoining land would increase in assessable value, and therefore the State would receive a greater income through taxation. This increase in the assessable value of the 30,000 acres—$500,000—$7,500, new personal property $5,000, total, $12,500. There would also be the wealth of new towns and villages with attendant thrift.

"These figures show a loss to the State during ten years of $125,000 without calculating the interest which would compound. Such a result may look decidedly unprofitable for the present moment, but a broader view should be taken, and it must be remembered that the country is being gradually developed, a flourishing State built up, and a prosperity engendered] which will be for all time.

"Perhaps the most serious drawback to the success of any general scheme is the want of population; and without people a complete and perfect system of irrigation can never be carried out. The present inhabitants of Central California number only from four to five to the square mile. In countries which successfully practice irrigation the ground supports a community. In Lombardy and Piedmont the population is 312 to the square mile. In the southern provinces of Spain it is 206; in France 178, and in Central India from 229 to 465. These results are obtained from geographical tables, but the real average of population in the irrigated districts is often greater than that expressed by the above figures. The want of population in California is the principal reason for suggesting that any works or system of works be planned for a future of fifty years, and that the State lend an indirect aid to hasten the completion of such. Irrigation must depend on the gradual growth of a conservative population. * * *

"Another circumstance which will retard the completion of any grand system is the existing water-rights. The canals which are at present in operation purpose to sell all their interests and rights to the State at some future time. What these rights are is a difficult thing to say. Over 1,500 water-rights are now on record. California is to-day far behind any other community in questions of water-rights. The water must belong to the land irrigated, and the owner of such land must possess in fee simply the water he requires. Common sense shows that a speedy settlement of this vexed question of water-rights is much to be desired. If we consider the sources of water supply, we must observe that Kern, Tulare, and Buena Vista lakes are shallow, and are fast drying up. Water from these lakes is of questionable qualities for irrigation. The winter rain-fall must be stored in the high Sierras. Then, too, the underground flow, which exists in all parts

of the valley, must be advantageously utilized.

"In a general way the following data may be presented: The length of the four canals from Red Bluff to Tulare Lake would be 1,800 miles, and of the secondary canals which would cross the valley from the main canals to the Sacramento and San Joaquin rivers from 1,200 to 1,500 miles. Yet as a rule the cuttings are through soils which are easily worked, and no great engineering feats are necessary to overcome any difficulties which may lie in the way. Many streams are to be crossed, but a simple construction of piling and redwood lumber will present works which would be equal in results to the best dams of the British and Italian engineers. They would not be expensive in proportion to the result obtained.

"Foreign works are generally of masonry, and often at an enormous cost, but in California we have the redwood, and the American can handle timber with greater skill and to better advantage than any other race. The amount of water necessary to prepare the land and mature the crop will vary in California according to the nature of the land and the age of the irrigation works. In Italy one cubic foot serves to water 60 to 70 acres; in Granada, 240; in Valencia, 200; in Elche, 1,000; in North India, 5; in California, 30 to 200 acres. Some of our valley lands received ten feet of water before they were wetted.

"Many questions can still be considered, but these would require time, and try your patience, yet they are important, and claim careful thought. One subject, however, has been brought forward, and although new, seems to be serious indeed. This is the presence of alkali in the soil, and of such nature and quantity as to almost ruin the land. A similar trouble has recently been noted in India.

"As we consider this important subject we can not but feel that it is the province of the present generation to initiate the undertaking, and to prepare the way for a thrifty population. The time, labor, and cost, can never be regretted. Such a system would make the central valley of California a garden land of magnificent extent, supporting a contented and prosperous people."

THOUGHTS FROM A GARDEN.

By Seddie E. Anderson, Santa Cruz.

After an unusually long and cold winter our gardens in Santa Cruz at last begin to put on a look of spring. One by one our favorites answer to the roll call, though many have fallen in battling with the frost.

In other climates where snow and ice are expected as a matter of course with the return of winter, I suppose people get used to the dreary aspect of their gardens, and do not spend much time in bewailing the pets that they knew were doomed to freeze down. But here, where only now and then there comes so severe and long a spell of cold weather as we have just had, a cry of mourning goes up for each heliotrope that is blackened with frost, each fuchsia that freezes to the ground, each geranium that gives up its tender life.

It is curious to note how much more some gardens suffer than others, a slight difference in locality, or in the matter of shelter making a great deal of difference in the safety of the plants. But it is rather provoking to hear some fortunate neighbor boasting of the welfare of his plants, while half of yours have succumbed. The frost has been very fickle here, striking or sparing where least expected. A few days ago I saw a beautiful smilax vine, green

and flourishing, which had grown all winter out of doors.

However, our cold weather is over at last, we hope. There are many flowers in bloom now. First came the violets; jonquils and English cowslips followed. Pyrus Japonica burst forth in scarlet splendor. Laurestina bushes hasten to unfold their pink buds till great clusters of white blossoms were in bloom, while pansies of every variety—light, dark, or mottled—have smiled at us from every garden plot. Everybody loves pansies, and no wonder. They are so bright and fresh and varied. They are such grateful plants, repaying a thousand fold any little attention that we give them, without any of the condescending stinginess with which some members of our garden reward our untiring labors for their good. The pansies have many friends, and like most popular persons, they have some whose friendship does them no good. For example the snails, who love them so well that they want to eat them, and do, unless some one prevents them.

At first many people can not imagine why their pansies have such a ragged look, but on close inspection they find these little black slugs or shell-less snails at their meals, for it is nearly always meal-time with them. These slugs are so nearly the color of the ground that they are not easily discerned. They are of various sizes, from next to nothing up to an inch in length. However cruel it may seem to kill such interesting creatures, it is plainly one's duty, if not one's pleasure, to get rid of them in whatever way seems most expedient. Some people spread a repast for them in the shape of cabbage leaves, hoping thereby to appease their appetites, and to save the pansies from their attention. This is like feeding tramps to get rid of them, they eat and send their friends. It does not at all improve the appearance of the flower-beds to have a lot of wilted and aimless looking cabbage leaves lying there, so this method does not prove a general favorite. Some give them their board (literally) with the privilege of paying for it with their lives. That is, a plant is put down at night near their rendezvous, and in the morning is lifted up, and the collection of snails sure to be found there is demolished. But enough on this subject.

At this season of the year comes a day now and then when a universal impulse seems to impel every one with leisure to work in the garden. It is an instinct much resembling that which leads every boy to know when it is kite, or top, or marble time. It is wonderful with what energy some will work at such times. Misdirected energy it occasionally proves to be, as when a certain individual, not far from Santa Cruz, in his zeal for trimming, cut close to the ground a beautiful cloth-of-gold rosebush which had covered his front porch with its lovely blossoms for several seasons. It happened, alas, to be a grafted rose, and when its branches grew again, only the commonest of pink roses made their appearance upon it.

It may be a prejudice, but it seems to me that a woman's conservatism generally has a better effect in a garden, and promotes its beauty more than all the energetic reconstructive ardor of the average man. It certainly does not improve plants to keep digging them up and moving them around. In nature the general habit of a tree is to grow up in the place where it started. Nature's ways with her flowers and trees are good examples to follow, and the further we get from them in our gardening the less pleasure will our gardens give to the intelligent beholder. Beautiful as the gardens of Santa Cruz

are, it is not difficult to imagine that with care and taste and a judicious letting-alone system, they may become more beautiful still.

CONSERVATORY POSSIBILITIES.

By Lorenzo G. Yates, Centreville.

The unprecedented cold weather of the past winter, the degree and persistency of which has injured and destroyed innumerable choice and valuable plants and shrubs which had heretofore passed through our usually mild winters without serious injury, will perhaps discourage many amateurs, and prevent them from again attempting to raise and cultivate such flowers and plants, which, from their susceptibility to cold will be liable to succumb to a recurrence of the experience of the past winter. But others, not so easily discouraged, will endeavor to so protect their plants as to enable them to weather it through. The latter class will be interested in the experience of those who have been more fortunate in preserving their floral treasures.

These thoughts have induced the writer to jot down the following notes, showing what may be accomplished with a small conservatory in connection with a greenhouse, the construction of which will require the outlay of but a small sum of money. These buildings may be constructed by any ordinary wood-worker, or a person possessed of a fair degree of mechanical ingenuity, with the knowledge of the use of the common tools of a carpenter.

The conservatory should be built on the southern or southeasterly side of the house, and in some cases may be made to occupy a part of a veranda, which would otherwise be of no particular use to the owner. Many residences are so situated that a portion of the veranda adjacent to the dining-room, parlor, sitting-room, or kitchen may be utilized for the purpose, thereby rendering the home more pleasant to its occupants, and furnishing an attraction for neighbors and visitors. It may be so situated and arranged as to present to view from one or more of the rooms of the house ever varying pictures of nature painting, more exquisite than the costly oil-painting, and to which the eyes of the members of the household will be turned in admiration of the beauties displayed, and as a recreation from the labors of the day, as well as furnishing glimpses of the wealth of tropical vegetation during the dreary winter weather, and an oasis in the desert of our dry and dusty autumn days.

One may often come across old windows and glass doors where alterations in dwelling-houses, stores, or public buildings have been made, which may be purchased at a low figure, and will answer the purpose admirably.

The side next the house should have a glass door or doors connecting with the living rooms, while the outside sashes may be hung on hinges, so that they can be opened to get at the plants to water or arrange them; by this method a much larger collection of plants may be accommodated than where there is but one opening to the conservatory.

Shelves may be arranged in the form of steps around the front and sides next the glass, while other shelves and brackets may be fastened to the walls, as well as inside the first rows of shelves. The roof should be of glass, with a frame on top on which is stretched white cotton cloth, which may be painted over with white paint after it is stretched on the frame; and this should run on rollers and be worked with cords running down through the roof at each end. This

frame is to be drawn over the glass roof during the heat of the day, otherwise the sun will burn some of the plants, but should be drawn back out of the way as soon as the sun gets to a point where it will not pour its rays directly down through the roof; and also on cloudy and wet days, so that the plants may have plenty of light, which is one of the essentials to successful plant culture.

The greenhouse should have at least one-half of the roof of glass, and the same exposure as the conservatory, but may be placed out by itself in the yard or garden, a door in one end, and may have propagating boxes on each side, running the length of the building. These boxes should be three or four inches deep, and filled with creek or river sand, and underneath them may be plain shelves for such plants as may be resting, or after repotting, while the gable ends may be fitted with cross shelves for cacti and such plants as require plenty of light and heat, and but little moisture, when not in bloom. The glass roof should be in two parts, and hung on hinges at the top to furnish ventilation during hot weather.

To show how plants requiring very different conditions and treatment may be cultivated successfully in the same building, by judicious management in placing them in suitable places, which a careful study of their requirements will show, I append a partial list of the plants now cultivated in such buildings as above described, which have cool, shady nooks for ferns and orchids, hot and dry shelves for cacti, and all the intermediate grades of condition for other plants, and to which any of them may be temporarily assigned as they may seem to require. The size of my conservatory is 4 by $4\frac{1}{2}$ feet. My greenhouse is 6 by 8 feet. The following plants are now thriving beautifully in this small compass:

Musa Cavendishi, Maranta zebrina, Piper excelsus, Gesnera zebrina, G. alba, Peperomia resedæflora, P. arafolia, Hibiscus Cooperi, H. puniceus, Fuchsia fulgens, F. procumbens, F. microphylla, F. corymbosum, F. Mrs. Cannel, F. Tower of London, F. Carl Holt, F. Gus Hart, F. Gem, F. Princess Alice, and others; Streptocarpus Rex, Libonia floribunda, Rivinia humilis, Cuphea platycentra, Stephanotis floribunda, Hoya carnosa, Bougainvillea glabra, Arum dracunculus, Mimulus moschatus, M. Harrisonii, M. cardinalis, M. tigrinus, Coleus pictus, C. multicolor, C. Shah, C. Chameleon, C. Kentish Fire, and several others; Achyranthus in three varieties; Cinerarias, Pelargoniums, Hyacinths, Daphne Indica, Fragaria Indica, Cocoloba platyclada, Farfugium grande, Primula sinensis alba, splendens, punctata, etc., Auricula, Gloxinea Sunshine, G. Chas. Dickens, etc.

Orchids. — Odontoglossum grande, Cyprepedium barbatum, Cattleya Skinneri, Anthurium Scherzerianum, Bryophyllum calycinum, Othouna crassifolia, Crassulas, Cacalia glauca, Mesembryanthemums.

Cacti. — Cereus grandiflora, C. triangularis, C. stella aurea, and others; Phyllocactus dazzle, P. rainbow, P. aurora, P. Fallii, P. America, P. Feastii, P. rosea grandiflora, P. microdeasiana, etc.; Echino-cactus LeContei, Opuntia echinocarpa, O. basilaris, Rhipsala, two species; Epiphyllum truncatum, E. salmonea, E. Buckerianum rubrum, Mamillarias, Feltonia gigantea, F. argyroneura, Kennydia alba, Justicea carnea, Sedum Sieboldii, Salvias, Tradescantias, three varieties; Scilla Peruviana, Tecoma jasminoides.

Rex Begonias. — Queen of Hanover,

Nebulosa, Rex, Pictoratum, Marmorata, Mrs. Stewart, Her Majesty, Lalla Rookh, and others; Begonia incarnata, B. multiflora hybrida, B. ulmifolia, B. ricinifolia, B. recemifolia maculata, B. Gilsonii, B. Verschaffeltii, B. Parnelli, B. odorata, B. discolor, B. Sambo, B. Weltoniensis and var. alba, B. coccinea and var. alba, B. arborea, B. arborea sanguinea, B. palmata, B. semperflorens, B. metallica, B. nitida, B. argyrostigma picta, B. Froebelii, B. nigricans, B. peltata, B. glaucophylla scandens, B. Fuchsoides, B. Digswellii, B. manicata, B. smaragdina, B. Edmondsii, B. zebrina, etc.

Native Bulbs.—Calochortuses, Cyclobothras, Brodæas, Liliorhizas, Caliproas, and some others, in variety of species.

Ferns.—Platycerium alcicorne, Pteris cretica var. alba lineata, P. serrulatum cristatum; Pellaea densa, P. ornithopus, P. Wrightii, P. Andromedæfolia, Aspidium munitum, A. rigidum var. argutum, A. aculeatum and varieties; Adiantum pedatum, A. emarginatum; Asplenium bulbiferum, Scolopendrium vulgare, Cystopleris fragilis, Gymnogramma triangularis and var., etc.; Achimenes grandiflora, A. zebrina, and others.

Without artificial heat many of the above named flowering plants have bloomed, the foliage plants retained their beauty, and the ferns grown luxuriantly during the past winter. The only losses caused by the severity of the season were a Feltonia and two or three Coleuses, and the young growth on Cattleya Skinneri, which was preparing to open its flowers when the first heavy frost came, while many conservatories in this neighborhood, at San Jose, and other places, lost a great many plants.

April 5th, 1880.

CULTURE OF THE PINE-APPLE.—No. 3.

By Rev. Jas. H. White, Florida.

Mulching makes a demand upon our attention since great stress is placed upon it by all here who have written upon the subject. One says "they require mulching to keep the sand and vegetable matter from blowing and lodging in the bud and leaf joints of the plants, which, if not washed out by the process of pouring water into the bud, will ultimately destroy the plant." Another says "the plant will not thrive if any impurities are permitted to remain in the bud or in the leaf joints. In sandy soil the plant needs washing out after every heavy rain or wind till the plants are high enough to admit of a good mulching of corn husks or straw." Yet another says "after the ground is thoroughly prepared, a heavy mulching of moss is spread over it fully two inches thick. The mulching will keep down all grass and weeds."

Our Lake Worth man is heavy on mulching. To prove that it is necessary, he says "they will not thrive if the roots of the leaves are choked with sand, even if the bud or crown is kept clear. Loose, cultivated soil alongside of the patch will blow over and ruin the plants unless there are several rows of corn or other wind-break to protect them."

These quotations contain two grains of truth, about the same amount of laziness, and the remainder is most unmitigated nonsense.

1st grain. Mulching will keep down weeds. This is true, but I believe it to be the invention of laziness.

2d grain. Sand in the bud if kept wet very long when the plant is not growing will kill it.

Here is an item of experience. In picking the fruit last summer some slips

were broken off while very small. They were set in very loose, sandy land. They were so small that to keep them in place they were nearly buried in the sand. The crowns were soon full, but were never mulched or washed out. They are now nice thrifty plants from a foot to eighteen inches in height.

To substitute mulching for cultivation is a saving of labor, but at a great sacrifice of results. Here there is little danger from wet sand when they are dormant. Our rainy season is midsummer, when they are growing vigorously. If dormant at all, it is in the dry season. January 1878 was an exception; instead of less than two inches of rain we had eleven inches. That wet winter killed several hundred plants for us. The water killed them rather than the sand, and neither sand nor water seems to harm them in the summer.

Sand in the axis of the leaves, or "leaf joints," I think is not a source of injury to the plant. When ours were first set, I supposed of course they must be mulched, but mulching material was not at hand, and by the time the plants were set both strength and funds were nearly exhausted. Subsequent thought led to the conclusion that it was no great calamity, and so far as I could learn it was not practical in any of the leading pine-apple districts of the world.

My instructions have all been in one direction, but my experience, shaped somewhat by necessity, has led me to adopt quite another line of action.

Washing out the plants frequently by pouring water into the bud or crown is by many thought necessary. As quoted above one says it must be done "after every heavy rain or wind," and all our writers say the bud must be kept clean. Our plants have not been washed much, and I think they have suffered but little for the want of it. A sudden heavy dash of rain washes them out, and the growth of the plant is continually lifting up any impurities that may have lodged in the bud.

Cultivation is worth naming, though non-cultivation is the fashion here and elsewhere. One says "weeds growing among these plants should not be hoed, but pulled up, disturbing the surface soil as little as possible." Here mulching is generally used as a substitute for cultivation, but on the Florida Keys and on the Bahamas, close planting is resorted to for the same purpose. But is this the better way? My plants were not mulched, and hoeing was a necessity. The result soon convinced me that cultivation is as good for pines as for corn, cotton, or cabbages.

Fertilizing will pay if properly done. One says "this plant being a coarse feeder, the soil should be highly fertilized with any strong manure." Perhaps its kindred, the air plants, are "coarse feeders." Another, "any stimulating manures may be applied unsparingly. Peruvian guano is the best." Yet another, "Peruvian guano, fish guano, stable manure, or droppings from the hen coop, are all good. Use which is most convenient." The last quotation will do, but it needs the comment "go slow." I believe a profuse application of any strong manure will be hurtful if not destructive, but a moderate use of almost any manure will be highly beneficial.

Where small piles of brush were burned the plants grow the best, but where log heaps were burned they appear diseased and stunted. The plant curves over to one side and the leaves die. The same thing appears in a neighbor's plantation. From this I concluded that a small amount of potash is useful, but a large amount is hurtful.

The plants I set last September a year

ago, have been sparingly fertilized with a liquid compound of soap-suds, house slops, and hen guano; this with good cultivation has produced excellent results. One edge of the plat had not been "cow-penned" (which is the usual mode of fertilizing here) but chicken-penned, and along that edge the plants act just as they do where the log heaps were burned. Also a neighbor had a few plants, and by way of extra care they were liberally fertilized with chamber slops. They grew vigorously for a time, then began to curve over to one side as above described until they nearly all died. From these facts I judge that a small amount of ammonia is helpful, but a larger amount harmful. Further observation may prove these conclusions fallacious, but in the light of these facts I see no other conclusion possible. But whether true or false it will be safe to "go slow."

Here is an estimate that appeared in the *Florida New Yorker* of Aug. 1878:

Cost of preparing an acre	$ 50
12,000 slips at three cents	360
Total	$ 410
SECOND YEAR.	
2,500 apples at ten cents	$ 250
10,000 slips at three cents	300
Total	$ 550
THIRD YEAR.	
8,000 apples at ten cents	$ 800
40,000 slips at three cents	1,200
Total	$2,000
Amount	$2,550
Cost	410
Profit	$2,140

The ground is heavily mulched, and has no cultivation. With a combination of favorable conditions this is not an extravagant estimate. It represents about the same conditions as a California wheat field of forty-five bushels to the acre. I will begin with the land prepared as for wheat:

6 500 slips at two and a half cents	$ 162 50
Setting plants	10 00
Three years' cultivation	27 50
Total	$ 200 00
SECOND YEAR.	
2,000 apples at ten cents	$ 200 00
8,000 slips at two and a half cents	200 00
Total	$ 400 00
THIRD YEAR.	
4,000 apples at ten cents	$ 400 00
16,000 slips at three cents	400 00
Total	$ 800 00
Amount	$1,200 00
Cost	200 00
Profit	$1,000 00

This estimate represents about the same conditions as your yield of twenty bushels per acre for wheat. At the end of three years the plantation is worth as much as it ever was, and if properly cared for, will produce well for several years—how many I don't know. Usually each plant will produce two suckers, with the fruit and slips. When the fruit is ripe both suckers and slips are too young for use.

The fruit is partly cut and partly broken from the stem, as close as possible to the base of the fruit, leaving both suckers and slips to grow a month more. All the slips are then removed, and the stem broken down to the leaves. Some reserve both suckers for future fruitage, but I leave one. This gives a surplus of as many suckers as apples for use or sale. 6,000 suckers at $3\frac{3}{4}$c, $225—to be added to the above estimate.

Island Home, Fla., 1880.

THE CACTI OF UTAH.—No. 2.

By A. L. Siler, Ranch, Utah.

When I left you in the February number of the Horticulturist we had just finished up with Echinocactus phonicens (not Echinocacti phornix as you and the printer made it). As the spring time approaches and the snows begin to melt away, I propose to take you for a ramble in one of the most

picturesque regions of Southern Utah. After passing through Sink Valley, and winding up a side cañon called the Elbow, where we are continually surrounded with wild Sage, Astemitia Pinus edulis, Juniperus Californica var. Utahense, and Peraphyllium remosisimum, we come out on a low ridge that divides the waters of Kunab Creek from those of Johnson Wash, where we first get a glimpse of the Black Knoll, an extinct volcano covering many acres, and rising about four hundred feet above the surrounding plain. On the south it is flanked by dykes of lava, and buttresses that might serve as a bulwark for an army. Now we begin to meet with the Opuntas, of which there are several, all of which are, in the minds of some of our local botanists (?), O. Missouriensis, but whether they are or are not I can not yet say; but one thing I do know, that there are Opuntas with long black spines, large leaves, snuff-colored flowers, and fruit of a large size and of a dark purple color, and when ripe of a pleasant acid flavor; and you also meet with another variety without spines, with a thick bloated smooth leaf, bearing orange-colored flowers, and with a dry capsule containing dry, hard seeds. If you pass on a few rods farther you may find still another kind with white spines, and pink flowers; again others have white flowers, and the same dry seed vessels.

But we must hasten on. Seven miles brings us to Clarkston, where we get water (the first since leaving Sink Valley), and eat a hasty lunch. We mount, and five miles brings us to another height, where we must take a look around. In the west the low hills, with scattering trees of Pinus ponderosa that surround Clarkston, are brought out in strong relief; to the north the cliffs forming the southern boundary of Pauns-a-genet plateau rise for several hundred feet, looking as if the country had dropped down, and left them to show how high it once was; but as we look ahead the way seems to be blocked at a distance of a few miles by impassable mountains of sandstone on which it is barely possible for even a cactus to sustain itself. We hurry on, down, down, until we come to the gate, then the vegetation begins to change, and we find Echinocactus phonicens by the dozen ranged a few feet above our heads as we ride along. They are growing on pudding stone and cements, that may have been mixed up millions of years ago. What they find to live upon there, is the question; but they are beautiful specimens, not large, but perfect in form.

We now come into the close cañon with the white sandstone cliffs on one side and steep sand ledges on the other. Barbares Freemonti is becoming plenty, and we are passing the last of the Peraphyllium remosisimum, but, to make up for them, we find Spiera cespitosa on the face of the cliffs wherever there is a crevice or ledge containing sand enough to cover their roots. On our left we see a ledge overhanging a small sand-hill, which from the verdant green it shows must be a moist spot, an oasis in the desert of dry sand and sandstone cliffs. We go to it, and find an Aquilegia, which in July and August produces the most lovely pink flowers; small, but their abundance gives them beauty. The sun is sinking out of sight, and we soon find ourselves at the cave spring, where we will water our tired animals after a thirty mile ride, and prepare for the night. But before we take our supper (we can eat after dark by the light of a Pincon pine fire), we must look around a little, and we climb a rocky, rough trail on which

we find Echinocactus Wislizeni at odd spots on the rocks. This is a small, round cactus, with reddish spines, a portion of which are turned in at the point making a hook. They are half hardy. I can not give an idea of the flower, as I have never seen them in bloom. After a climb of half an hour we came out on a sand bench, where Pentstemon ambiguous, with its phlox-like pink flowers in July, abounds; descending after walking around through the sand, we came upon Shephardia rotundafolia with its silver foliage and flower buds of rare beauty.

FACTS ABOUT FRUIT.—No. 3.

By M. P. Owen, Soquel, Cal.

In my last article on this subject I spoke of the merits and demerits of certain kinds of fruit grown in the Santa Cruz Mountains and foot-hills of the same, as viewed by those who are growing them. Now I will give you a little of my own experience in fruit-growing, and by comparing it with your own, and what you know of others, you may gain some good points. I will note my success with certain kinds of fruit grown in the foot-hills, near the bay, and in the fog region.

My cherries, comprising the common kinds of red, white, and black varieties, bear at three years from the graft, and keep it up regularly every year, and are of good size, color, and flavor, and beginning with the May Duke, and ending with the Late Duke, I have cherries from the first of June till the first of September, and even to the tenth.

Next are my plums and prunes; they are hard to beat. They bear at three, four, and five years old from the graft, and keep it up regularly and profusely, and are of good color, and flavor, and very large—some Hungarian prunes measured seven and a half and eight inches around. And the Bradshaw and Purple Egg plums were nearly as large, and were very rich in flavor, but the Petit d'Agen prune beats them all for richness and bearing qualities.

The Winter Nelis pear, with me, is the thriftiest tree, the earliest, and most prolific bearer, the richest and most valuable kind that I have. The early pears I have, including the Bartlett, are only medium in quality, but of good size. Higher up on the mountains I find the Bartlett very fine in flavor, and of good size, and quite salable for the Eastern market. But owing to the active demand for fine grapes and prunes for the Eastern market and San Jose canneries, and the fact that the Santa Cruz Mountains can not be beaten for this kind of fruit, the fruit-growers up in that delightful region are planting many prunes and grapes to supply the increasing demand for such fruit, for the Southern Pacific Railroad takes it right from their doors at reasonable rates. Some readers may say, "What of it? What have you learned?" Well, I have learned that there is a growing demand for fine pears, prunes, and grapes for the Eastern market at very satisfactory prices; and that the Santa Cruz Mountains and foot-hills will produce just such fruit, as well as a great variety of other choice fruits, for which we have a steady market. Yet many people who have orchards full of poorly cultivated, worthless kinds of fruit, will say "fruit wont pay," and consequently one may see the ground literally covered with worthless fruit in many orchards throughout the country, while their more enterprising neighbors are taking in handsful of coin for choice fruit grown on just such soil, and without extra care or labor—only with their eyes open to the demands of the market.

GOOD VERSUS BAD CULTIVATION.

By LEONARD COATES, Yountville.

The fluctuating, and for the last few years decreasing, prices of fruit in the San Francisco market, has led many orchardists—mostly small growers, and of limited experience—into the grevious error of economizing, falsely so called. They argue upon the hypothesis that "a penny saved is a penny gained"—a broad principle, good enough in certain conditions and circumstances, but far too broad to be applied indiscriminately in all cases. The high price of labor is another reason given for this economizing. This is a cry raised so frequently that there is imminent danger of its becoming a proverbially California one. There has been abundant cause for it, and some may yet exist, but we should take into account the many natural advantages possessed solely by California, put them in the scales with our high labor, and methinks we should come out at least on a par with any other part of the known globe. There is some fear of our becoming sentimental in dwelling too much upon the salubrity and equability of our climate. We need something more substantial than balmy breezes, gentle zephyrs, and blue skies, it is true, but, at the same time, it is possible to underestimate these things.

Some orchardists endeavor to "save a penny" by pruning only in alternate years, and they are clearly "penny wise and pound foolish." I would rather advocate more summer pruning, which can be done at odd times when there is little else on hand. This summer pruning should consist chiefly of cutting or rubbing off the surplus suckers or shoots, leaving the heading back of main stems until the winter. Laterals may, however, with advantage, be pinched back, but sufficient should be left for the purpose of shading from the direct rays of the sun. If this is systematically attended to, much time will be saved in the winter, and the wounding of the trees by extensive use of the saw and shears will be rendered almost unnecessary. It is most consummate folly on the part of anyone under any circumstances whatever, to neglect an orchard, if he thinks by so doing he is adding to his income by "economizing." If all those owning an orchard were to prune it or superintend the pruning of it themselves, good results might follow. Farmers and others should make a point of studying the cultivation of trees, and not leave their pruning or grafting to the tender mercies of some unknown itinerant tree murderer. I refer to those individuals who have "been pruners for forty years;" they should as a rule be avoided as religiously as if their pockets were lined with codling moths, woolly aphides, and borers. It is a most pitiable sight to see so many badly kept orchards. In the first place, trees are often set out without any cutting back to counteract the injury done to the roots in transplanting; they then have to stand, in their enfeebled state, the scorching rays of a July sun, and before the summer is over they will be mostly destroyed by the borer. The main stem of all young trees should be protected from the hot sun, either by shakes placed at right angles on the south and west sides, or (which I prefer, as it acts as a trap for the larvæ of the codling moth) by wrapping strips of sacking around the trunk. It is well also, especially when trees are planted late in the season, to mulch with a dressing of well rotted straw or manure.

These various operations are simple, and need not take much time, but much importance is attached to them. There are, however, those who seem to think

they can do better by letting the trees take care of themselves.

It is a question in my mind whether we do not sometimes show too much kindness to our orchards. I do not think we should plow and cultivate alike all trees, or in all soils. In deep, rich valley soil, if it is constantly stirred the trees will make too great a growth, the wood being pithy and immature, and ultimately, as with the Columbia plum for instance, the hollow in the centre of the limbs will cause or hasten the decay of the heart-wood. I believe the primary cause of gumming in cherry trees to be an overabundance of sap. Planted in rather light soil, with great care being used in keeping the trunk cool, the cherry would, I am confident, be much hardier, and live longer.

From observations in Napa Valley I have come to the conclusion that when orchards have attained the age of twelve or fifteen years, they may with advantage remain unplowed, in some localities, but this is a subject that requires more looking into.

April 15th, 1880.

ON CERTAIN METHODS OF PRUNING ORNAMENTALS.

By Charles H. Shinn.

My friend, John Careless, of Minorville, is a nervous, restless, impatient sort of a man, who trims his rose bushes at the earliest possible moment in the autumn, and indeed has injured his shrubs many a time by pruning them before the leaves had fallen. Owing, I suppose, to his habits of haste, he never cuts a branch off where he should. He leaves a spear or projection at every cut. Instead of taking off a branch close to a bud, or close to the main stem, he dots his bushes with angles, projections, decaying stubs, disease, and final death. This unfortunate habit of my energetic friend I can not but deplore, and must, despite his wrath, hold it up to the scorn and pity of the horticultural world. If, in sunny April, or mellow days of earlier May, one wanders into his garden, there will be seen, above the white blooms of the Deutzias, and not yet hidden by the young leaves, rude, clothes-pin-like stubs, lifeless, signs of a hasty and vicious system, or rather no-system, of pruning. John Careless, unless thou cuttest closer to the buds next season, we can not in justice fail to say yet severer things about thee in future!

Martin Rule is another person whose methods of pruning need severe judgment. He lives in the town of Propriety. He hath a deliberate step and an air of caution. Most of the time he has his coat buttoned up to the chin. Nobody ever saw him run, but there is a tradition to the effect that once, when his wife was sick, he walked quite rapidly for the doctor, and was really out of breath when he arrived there. In his garden monotony reigns supreme. He appears to have, as it were, in his mind's eye, a sort of an ideal tree, of exact and geometric character, and toward this he vainly struggles, winter and summer. I think he would like to have a shrub, such as a lilac, for instance, grow up in one straight stem without branches, and then be able to go out with a bit of chalk, and mark, at regular intervals, the places where branches should grow. Then he would prefer to have these branches alike, each to each, in size, shape, the number of leaves they have, and finally in the number of blossoms. His favorite flowers are the Hoya carnosa and the Camellia. For the globe cacti he also has a feeling much like affection, but this he endeavors, with considerable

success, to restrain and keep under proper control.

Martin (I am a little afraid of this familiarity, and had best say Mr. Rule) has every shrub in his garden, comprising perhaps fifty varieties, trimmed into cone-like formalities. He has sheared the outside branches close and closer, until a stiff geometric figure has been formed, having a hollow interior. The green leaves are all on the outside, and, crowded closely, have become small and unnatural. The leaves and lesser branches in the middle of the bush are dead and long ago disappeared in mute sorrow—in speechless agony. Poor shrub, by cold iron perennially tortured, yet ceaselessly struggling to act out thy real nature, and be thine individual self! I pity thee, and likewise thou, Martin Rule, to whom never, even dimly, has come any real sense of the nature of this world. Men build straight-streeted cities, impelled thereto by reasons of trade and convenience; but wouldst thou have cube-like mountains, and clouds four-square like a blanket, and rivers in canals, dug on meridian lines? Wouldst thou still the flutter of the robin's wing, and straighten the wandering path of the swallow? Get thee to the Sierras, and spend thy days in endeavoring to replant her pines in orchards; go down beside the springs and set the ferns in rows; seek, in this very month, the plains of Merced, wonderful with multitudes of wild flowers in great shining hosts, as the sands of the sea in number, as the stars of heaven in their beauty; then rest, forgetting this, thy mathematical craze. Otherwise, my poor friend, I can not find any comfort for thee in this thine earthly pilgrimage.

Penicillaria spicata requires a long summer to perfect it.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

ALONG THE HEAD-WATERS OF CACHE CREEK.

EDITOR HORTICULTURIST—Dear Sir: On a bright morning recently, the writer with several others left the hospitable home of D. C. Rumsey, at the head of Capay Valley, for a trip up Cache Creek Cañon, prospecting for a railroad route to Lakeport; and as the beauty of these solitudes is comparatively unknown, and are only accessible by mountain trails, over which sure-footed animals may carry one in safety, you will no doubt be pleased to hear something about the wild scenery where the wilder waters of Cache Creek dash madly over bowlders that have at some time been loosened from their places far up the mountain, startling the solitudes as they bounded down the steep descents, to find a resting place, and form huge barriers in the narrow channel.

As we ascended the grade on the new mountain road to the lake, the wind, which is never less than a fresh breeze here, met us with a sharp embrace. The road for five miles winds along the west side of the creek, rising at times hundreds of feet up the rugged mountain side, leaving beneath a dizzy precipice. At one rocky point the road has been cut through the solid rock leaving huge pinnacles between road and creek, gigantic monuments to the memory of those who so faithfully toiled to remove barriers and hew around the bluffs a mountain road.

Mountain springs trickle threads of cold sparkling water from clefts in the

rocky walls, or well up in some deep gorge and form tiny streamlets down to where their waters mingle with those of the creek. Huge blocks of stone hang on the edge of dizzy heights; the rain and wind sometimes loosen them and render the danger a reality to be dreaded by the most daring. At Ray's sheep ranch we leave the road and follow the creek winding along the mountain base by a trail on the east side until we arrive at Salt Creek, where for some distance we must either wade up the rocky bed of Cache Creek, or climb a steep mountain ; we choose the latter, and on reaching the summit were rewarded with a view of one of the most beautiful and pleasing landscapes that vision ever rested upon, and it is safe to say there are none lovelier in all the Coast Range.

Small tracts of gently sloping, grassy lands lie here and there, beautiful meadows in appearance, while giant oaks grow in careless order with wide spreading branches—gnarled, crooked, and scarred with age—and in whose ample shade the wild deer finds a cool retreat. Pines, cedars, and live oaks, with evergreen boughs, add their charms to the scene; while the stream, like a silver ribbon, winds about the mountain's base, and with a glistening border bounds the meadow's side. Now here, as if stopping a moment to rest, forming a placid lakelet, and there, dashing and sparkling in the bright sun, Cache Creek rushes through its rocky channel, sending to our ears low and plaintive sounds and never ceasing. murmers of restless waters.

When will these grand old solitudes echo and re-echo the engine's whistle as it bounds along its iron track over a route which is one of the most pleasing and attractive that could well be chosen, penetrating the rich agricultural districts of Lake County, and opening a way to many valuable mines and popular summer resorts? Here are undeveloped quicksilver mines that would afford employment for thousands, and add largely to the wealth of California. Many to whom the journey is now impracticable would visit Bartlett's and other mineral springs if they were accessible by rail.

The beautiful and fertile valley of Capay would contribute largely to the business of a road. A railroad is what this part of Central California needs to make it one of the most desirable locations in all the Pacific Slope.

Yours truly,

T. D. Morrin.

Rumsey Station, Capay Valley, Yolo County.

FUCHSIA GROWING.

Editor Horticulturist:—The State Horticultural Society ought to have an exhibition giving prizes for the best plants. Among these prizes there ought to be one for the best twelve fuchsias. I offer a few notes on the treatment of this beautiful flower.

The plants should be started into growth about the first of December. When they have made a growth of about an inch of new wood, shake them out of the old earth. Cut back the old roots and re-pot in as small a pot as you can. Pot the roots in a compost of yellow loam and cow manure; three-fourths loam, one-fourth manure.

On the 1st of January have your cutting bed ready, whether it be a saucer, pan, or bed of coarse sand, take cuttings of the young wood two inches long, insert them in the sand one-fourth of an inch, keeping this sand moist until the cuttings are rooted and removed to thumb pots. Should you wish six plants of one variety put in at

least twelve cuttings, so that you may select the thriftiest growing ones. You will notice that all those cuttings will not be of the same growth. Those that start stunted will never make as good plants as those that grow well from the start. These will make exhibition plants. When the thumb pots are filled with roots, shake off the earth, prune the roots, and re-pot in the same pot with fresh soil. Pinch out the leader of each plant, this will encourage side branches. Keep stopping and training until you get a proper shape and size, which is by June six feet high, and well furnished with branches.

When the time comes you will have to set each plant on the exhibition table on an inverted twelve-inch pot, so that its lower branches may gracefully bend over, touching the bench. Such will be creditable plants, and such can be grown by any one with a little attention.

Keep them at all times close potted. When in vigorous health water them plentifully with liquid manure. A good rule is to water with clear water in the evening, and use the liquid manure in the morning. By attending to this I have applied it to plants when in a growing state. If you grow plants in a lean-to greenhouse or in your sitting-room, to shape them evenly you must each day turn them round to the glass, so that each part of the plant will get its share of sunlight.

Your greatest enemy will be the red spider. Watch him carefully. Lay your pot on its side, between two pots inverted. Syringe well under the leaves by turning the pot around on those others. Never mind the top of the leaves, you need not look at the top for them; if they are on your plants the naked eye will detect them by the leaf being yellow. If you allow them to increase so as to be seen easily, you can throw your plant on the waste heap instead of placing it on the exhibition table. I state this small item for it is the whole of the secret. Of course all practical men know this, but as I noticed some time since the Horticulturist stated how to take a plant out of a pot; practical men might say this was useless information. Strange as it may seem I have been frequently asked how to take plants out of pots without breaking them. G. Howatt.

San Francisco, April 20th.

Napa Notes.—The frost scare in Napa Valley is over. The injury done was confined mostly to late peaches and almonds. The latter crop will be very light.

Grain looks more promising than it has for years, the rain-fall having been heavier than usual.

Cherries, plums, apples, and pears, promise an abundant harvest.

The warm, showery weather is just what was needed.

There is a splendid opening for canning factories in Napa. L. C.

Yountville, Cal.

A lady writes that last year her lilies of Japanese varieties died down just as they were in bud, much to her sorrow. This is caused by a disease in the bulb, which can be prevented by planting it in a shady place, and deep enough. Shallow planting and too much sun are often fatal to L. auratum.

The Bran Remedy for Slugs a Success.—Editor Horticulturist: We have tried the bran remedy for the snails or slugs, mentioned in the April number of your magazine, and find it works like a charm. By moistening it a little and placing a box loosely over the little hill of bran, from half a dozen to twenty or more either around the edge or on the

sides of the box can be destroyed every time you look for them, and sometimes it is three or four times a day. We generally throw boiling water on them, and sometimes we kill them with salt. We have tried about every heard of remedy for the destruction of these "slimy imps," but this has proved the most efficacious of them all.

C. L. B.

San Francisco, April 22d, 1880.

BRIEFS OF CORRESPONDENCE.

We are asked what plants will bear shade reasonably well. (This is for a city garden, pent up between high brick walls.) All the ferns enjoy shade. Fuchsias and geraniums, ivy and jasmines get along with little sunlight. Pansies, Clarkias, Mimuluses, Myosotises, and Whitlavias thrive in partial shade.

Some one asks about verbenas. They are one of the best plants we have for massing in the summer garden. They bear an endless amount of trimming. They do best in light, rich soil, planted two feet apart each way, watered occasionally. Choice varieties may often be grown from seed, but most plants are grown from cuttings.

A lady correspondent says that she has grown several seedling roses, and will they ever bloom? Others have asked that question before. Seedling roses are slow enough, and waiting is tiresome work. The best way is to take some buds from the seedling and put them on a thrifty stock. Then they will arrive at a blossoming age sooner than if left on their own roots. This is the only process of hastening the blooming time. We are glad to learn of seedling roses. California ought to be full of rose experiments.

BRIEF HORTICULTURAL NOTES.

Mulch the strawberry beds.

Chiccory is grown on the islands of the San Joaquin.

A Kern County man sheared 80,000 sheep last month.

Robert Gore, of Vallejo, is engaged in mushroom raising.

800 acres of cotton is planted on the Merced River bottoms.

Train the vines on the trellises this bright, growing weather.

A good article of sugar has been made from honey in Los Angeles.

Haggin & Carr have planted twenty acres in ramie on Kern Island.

Cranberries are being grown on Redwood Creek, Humboldt County.

Grape vines need to be cultivated with great care for the first three years.

The Schumaker peach is said to ripen three or four weeks earlier than the Alexander.

Potatoes can be grown by covering them with straw or manure instead of with soil.

Riverside and Pasadena may well be proud of their beautiful realms of the orange and vine.

Los Angeles County has 5,172,000 bearing vines, and 1,200,000 more were planted this year.

When the small clusters appear on your grape vines rub off the surplus, blossomless shoots.

The Wood's Early Apricot, a Riverside seedling, is the earliest known in Southern California.

Dr. Dimock, of Orange, has a tree four years old from the bud, which bore 250 oranges this year.

There is a safe and sufficient reward in good varieties of grapes well cared for on suitable land.

The Riverside Water Company are constructing a new ditch. The price of land is $200 per acre.

Forty-eight acres of grapes in Sonoma County made 25,000 gallons of merchantable wine last year.

The Newcastle Fruit Growers' Association shipped during the fall of 1879 22,000 boxes of apples.

Dairy work is brisk in San Luis Obispo, along the coast, and also on the alfalfa fields of Kern and Fresno.

Slugs are infesting many gardens. Lime is obnoxious to them. Dust the leaves at night with unslacked lime.

The effects of applying lime on soil are not noticeable the first year, but they become more and more apparent.

Don Mateo Keller, of Los Angeles, has planted some of our wild California grapes to furnish coloring matter for wines.

The British Royal Horticultural Society has described more than 15,000 varieties of apples, mostly of European origin.

The Golden Arborvitas are handsome trees for the centre of a circular bed. They may be kept at any desired height.

The growers of limes and lemons must be sure and prune their trees well so as to keep the tops open, and make the fruit large.

In the Sierra counties garden work is now in full blast, and seeds must be put in the ground. The early bulbs are now blooming.

White helebore powder is a good remedy for the rose slug. Dissolve one-eighth of a pound in a bucket of water and apply with a syringe.

There need be no fear of overdoing the fruit business in California during this generation at least. The demand will keep pace with the supply.

It is said that hemp is good to banish insects from the orchard and garden. The Buhach plant (Pyrentherum carneum) is better for this purpose.

The olive industry ought to be encouraged in every possible way. It is one of the most profitable things a man can take up, if he has patience to work and wait.

As a shade and ornamental tree the acacia would be one of the best, were it not for its tendency to scale-bug. Use whale-oil soap, and free potash as a wash or spray.

When applying liquid manure to a plant do not have it too strong. Dilute it to the color of rain water. It is better to apply often than to deluge with liquids of great strength.

In order to kill weeds on the garden walk, boil one pound of arsenic in a gallon of water, add five gallons of cold water, and sprinkle the paths. One application kills the weeds effectually.

Many beautiful flower gardens in the bay counties, which were thought to have been seriously injured by the frosts of last month, have come out beautifully under the warm rains and sunlight.

Oleander cuttings can be rooted in a bottle of water set in a window where there is a southern exposure. Put a handful of sand in the bottom. When the roots are half an inch long, pot off in sandy loam.

Japan lilies do well planted among the shrubberies.

Selected Articles.

PILOGYNE SUAVOLENS —This is a charming climbing plant, not new, but somewhat rare, which deserves to be more widely known. Messrs. Ellwanger & Barry say that as soon as it is known it will rank number one as a valuable ornamental plant for covering trellises, pillars, and rustic work, indoors and out. It is a remarkably dense and rapid grower, and is particularly fine as a pillar plant. A pleasing effect may be produced by placing several plants 4 to 5 feet apart in the form of a circle, each plant being furnished with a stake 6 to 8 feet high. When the plants reach the top of the stakes they may be trained to run on a wire from stake to stake.

The vine is killed to the ground by the first frosts of autumn, when it should be cut off and the roots taken up and potted. If placed in a window it will soon start again, making a beautiful decoration. In the spring it may be again cut back and planted out. The flowers of the vine are small, creamy white, and fragrant.—*Maryland Farmer.*

OUR ROCKY MOUNTAIN EVERGREENS.—It ought to be generally known that the rule for plants' names is that the first person who shows wherein a plant is new, and describes and names it in any reputable scientific publication, shall have the privilege of naming it. This name stands against all that may come after it. Subsequent names are synonyms. Now, very often the wrong name will prevail for some reason, and though the error is known, people dread to change for fear of confusion. But it is generally found that the time comes when some one or another digs up the original name, and insists on the law of priority, and more trouble comes from going back then, than if the courageous step had been taken when the error was first discovered. Thus it has been with Abies and Picea. We have tried to tolerate the error for years, but have to come back to the track at last. We give below Dr. Englemann's nomenclature, interesting to those studying Rocky Mountain forestry :

Picea Engelmanni, Engelm. (Pinus Commutata, Parlat.) — This beautiful tree is the most alpine of all North American spruces, growing in the Rocky Mountains of Colorado, at an altitude of 12,000 feet. It grows from eighty to one hundred feet high, with a strict pyramidal habit and pleasant glaucous coloring. The wood is white, soft, free from knots and resin, easily worked, and of great value. This species will be found an invaluable acquisition for the northern portions of the United States, Canada, and the north of Europe. Even at St. Petersburg it has proved perfectly hardy.

Picea pungens, Engelm. (Abies Menziesii of the Rocky Mountain flora, or Abies Menziesii Parryana of the *Gardener's Chronicle.*) — This species has been tested at various points on our northwestern prairies, enduring a temperature of 30° below zero without injury, and also very extensively near Boston, where it has stood out entirely uninjured during the last sixteen years. This is not only one of the hardiest but the most beautiful of all the spruces.

Pseudo tsuga Douglasii, Engelm. (Abies Douglasii.)—Raised from Colorado seed, this fine tree has proved itself perfectly hardy in the very low temperature and severe winds of the northwestern prairies, and in Eastern Massachusetts, where it has stood entirely uninjured during the last sixteen years, although plants raised from seed from the Pacific Coast are quite tender and unable to endure our winters.

Abies concolor, Lindl. (Picea concolor, Gordon.)—This includes Abies grandis of the California botanists. A Parsonsiana, A. Lowiana, A. lasiocarpa, and amabilis.

The seedlings offered have been raised from seeds collected in the Rocky Mountains, in Colorado, and will, without doubt, prove hardier than those raised from California seed. The Colorado form, with its larger leaves and lighter color, is even superior from an ornamental point of view to the popular California tree.

Pinus ponderosa.—We have had the seeds of this tree from the Pacific Slope under several different names, but in every instance the seedlings failed to endure our winters. The trees from our Colorado seeds have stood the past six winters without the slightest injury, and we believe it to be perfectly hardy. "As seen in the mountains of Western America, Pinus ponderosa is the most magnificent of all North American pines. It produces heavy and very valuable timber—the yellow pine of California, Colorado, and New Mexico."—*C. S. S., in Gardener's Monthly.*

Ornamental Planting.—James Vick, of Rochester, recently read an interesting paper on the culture of flowers, in which he contrasted the early attempts at securing a display from grass pinks, hollyhocks, sage, and thyme, with the rich beds of the finest ornamentals now so common on the grounds of intelligent owners. He gave practical directions for making garden walks, in draining, in forming flower beds, and in the details of their management. He urged as vitally important that no one should occupy more ground for these purposes than he could keep in the most perfect finish and in the highest state of cultivation. The great mistake with many is in spreading over too much ground. Mr. Vick gave the following list of ornamentals for flower beds of various kinds:

Dwarf Plants for Edgings or Borders of Beds.—Alternanthera, Armeria or Thrift, and Pyrethrum aureum.

White-leaved Plants.—Glaucium, Centaurea, and Cineraria maritima.

Showy-colored Foliage.—Achyranthes, Coleus, and Bronze and Silver-leaf Geraniums.

Scarlet Geraniums.—Gen. Grant, Queen of the West, and Excelsior.

Tall Foliage Plants.—Caladium esculentum, three to four feet in height; leaves more than two feet in length. Cannas, from three to five feet in height; a variety called robusta, from five to eight feet. Ricinus, castor oil bean, from six to twelve feet.

Annual Flowers for Brilliant Show.—These are doubtless familiar to most of our readers. The Aster, Antirrhinum, Balsam, Dianthus, Delphinium, Pansy, Petunia, Phlox Drummondii, Portulaca, Salpiglossis, Stock, Verbena, Double Zinnia, and other varieties that we have not space to name, should be in every collection.

Flowers Desirable for Fragrance.—For fragrance nothing equals the Mignonette, Sweet Alyssum, Sweet Pea, Erysimum, Stocks, Pinks, Picotees, and Carnations.

Ribbon Beds.—A very pretty ribbon bed is made by taking different colors of the same flower, like Phlox, Portulaca, Stocks, or Asters.—*Country Gentleman.*

Lilies in Gardens.—As a general thing the lily is not a success in most gardens. This is, however, chiefly from improper soil being used, or their being put into improper situations. The plants rather like the open sunlight,

but the roots abominate hot ground, especially when stiff. In Professor Sargent's grounds at Brookline, Mass., they are planted with the rhododendrons, and are a magnificent success. Here the rhododendrons shield the bulbs from the hot sun. It is besides an excellent idea as a mere matter of garden taste, for the rhododendrons are all over blossoming before the lilies flower, and so the flowering of the beautiful evergreens seems to be prolonged till late in the summer, when the lilies disappear. —*Gardener's Monthly.*

YUCCAS OF UTAH.—Yucca brevifolia grows into a tree, sometimes twenty feet high, and looks as though it might be, at least, a cousin to the palm. The trunk or stem is a mass of fibre, finely and strangely woven; leaves also fibrous and short, armed with sharp points. It blooms at the top and end of limbs in June—a thick, heavy mass of light creamy flowers, from one to two inches in diameter. The spike is studded with lateral branches of flowers, the whole often weighing ten or twenty pounds. The seeds are thin, flat, and nearly round, encased in dry capsules or pods. In approaching a grove of these by moonlight, one might easily fancy they were facing an army of giants. The whole of this tree is valuable as a paper material. Yucca baccata is the next most important, furnishing strong fibres in abundance for the manufacture of paper, cordage, ropes, rugs, brushes, etc., and is the plant which furnishes for commerce the article known as tampico. Leaves from two to three feet long by two inches in breadth, composed of vegetable and fibrous matter, armed with sharp points. The blossom stalk arises in June to the height of four to six feet, branching and heavily laden with large, plump buds that open out in large, rich, cream-colored flowers, magnificent to behold, and yielding a strong lily-like perfume. Such a head of blossoms ought to command, in any large city, five dollars readily. The seed is round, flat, and black, similar to last described. An edible fruit is contained in the cells of the apple.

Yucca Angustifolia is a smaller plant in size, leaf, and flowers, otherwise somewhat similar. The flower stalk is a little taller and more branching, color and fragrance much the same. The roots of both plants are valuable to the laundry, and are much used in place of soap; will make a lather equal, and for some uses preferable, to the best of soap. The leaves of both are used for strings to tie up grape vines and other plants.—*Botanical Index.*

A CONSTANT BLOOMING BED.—Make a round bed of any size, and plant an inner circular row of crocus, and next outside a row of hyacinths; then a second crocus, and next one of tulips. Continue this until the bed is filled—making every second row crocus, and alternating hyacinths and tulips between them. The row on the extreme edge must be crocus, and the space inside of the first row should be filled with tulips or hyacinths. The effect of a bed thus prepared is extremely pretty for a long time, and, thus arranged, it may remain undisturbed two or three years.

After the bulbs have finished blossoming the foliage should be allowed to ripen, to perfect the bulb for another year; but the surface may be immediately picked over with a fork (between the rows between the bulbs) and portulaca or petunia seed may be scattered over the bed. These will be growing finely by the time the bulbs are gone. After the first year these latter

will sow themselves and be ready to bloom early. If foliage beds are preferred, small plants of coleus, cineraria, and centaurea may easily be set out between the bulbs, making the bed very ornamental for the remainder of the season.—*American Garden.*

Editorial Department.

NURSERY BUSINESS IN CALIFORNIA.

The nursery business is assuming such large proportions on this coast that a brief exposition of the conditions of its development can not but prove interesting. The nurseryman is so directly dependent upon his reputation for the character and amount of his trade that the actual tree-grower is usually honest, painstaking, and willing to be held responsible. The accusation of selling poor trees, or those untrue to name, comes mainly from those who have bought of irresponsible and ignorant peddlers, men who know a tree because it has roots, a rose because it has flowers.

It has unfortunately come to pass on this Pacific Coast, that persistent rivalry has built up an evil as regards the nursery business, which ought not to be allowed. The prices of many kinds of fruit trees and of the rarer ornamentals is much too low. We say this at the risk of offending some of our readers, who, not having grown plants, but only having bought them, and finding that they cost considerable money, are hardly willing to admit that the price can be too low. But we produce the following facts: (1) Nursery land is as high here as it is in the Eastern States; (2) the cost of labor is greater; (3) the wholesale catalogue prices at which trees and plants are sold is less here than there.

We might also add, as regards the ornamental part of the business, that the number of cultivated and liberal purchases of rare and costly plants is as yet very small. Some of our wealthy men made their money under the dangers and excitements of stock-gambling, and they live without any abiding sense of the beauty of the world of flowers. Fast horses, and new deals in mines, are their dearest enthusiasms. They do not know how much they lose. It is a comfort to know that there are some kindly and generous millionaires, who love gardens and conservatories, and are beginning to show us how much can be done here. The time is coming when gardens will be the rule, and not the exception, in cottage, home, and palace—by sea-shore, and in windy ravines, and in that golden age our nurserymen will reap their harvest.

THE MONTH OF ROSES.

Never mind what the books may say about the glories of June, and the roses thereof. This is California, waiting on her emerald hills for the waves of human industry that shall before long roll in and fill every nook and slope with busy people. And when our poets, in the fair and beautiful years to come, write of the gardens of California, they must not forget that May is our month of roses, April its herald, and June its hand-maiden. Even in windy March the roses give us premonitory hints, wayward yet precious. Few things go to sleep in our gardens. All winter long they tip-toe in hushed expectancy—buds hidden, blossoms folded, crimpled leaves only half out of sight, along the quiet cells slow sap creeping. Touch with a week of warm weather the rose-bushes, even in January's heart, and lo! they nod, half sleepily, but wholly good natured, and crown you with a handful of creamy-tinted buds.

But all that is over with. This last winter was blessed with fewer roses than usual. So we now reap our reward for being good when we could not help it, and sacrificing our winter roses. We are in the midst of a multitude of climbers, standards, bedders, bourbons, teas, hybrids; we may gather roses by the basket for our gardenless friends shut in city walls, or islanded in some vast hotel. Pure white, cream-tinted, golden, winding about a pillar, and widening over porch and lattices. I see, not far off, the mingling shades of white and yellow Banksia roses, two plants, set together, now such a mass of color that the eye is dazzled with splendor. Then, not far off, there are beds of standard roses, blooming in wonderful harmonies of white, pink, rose-tints, scarlet, crimson, shades and hints of purple and violet, aureoles of orange and gold, colors of damask and velvet, of sunset and sunrise, cool twilight shadows and the pale silver of moonlight on still waters, all these blending softly in the midst of green leaves, in the heart of earliest May, and in a fair land where gentlest breezes stir, mute butterflies waver past, and the brown-belted bees continually murmur as they haunt the purple foxglove bells and golden hollyhocks in the borders beyond.

Such is the picture; possible in every valley and on every hill-side of our State; possible wherever strong and willing hands set themselves rightly to the task. If we plant gardens now, in the youth of our State, how beautiful they will be when, years hence, time hath wrought its mellowing work, and about ruined, hoary, classic piles, the ivy, ampelopsis, and aristolochia have wound their arms. We are as yet too young a community; the gloss is not gone from the polished granite walls our millionaires build about their homes, and nowhere, except in the deserted mining camps, is there a sense of venerable age and romantic decay. Patience! The last half of the nineteenth century may yet seem historic to countless Californians hereafter.

FUCHSIAS FOR CALIFORNIA GARDENS.

Even the best gardens of California are far enough from what they might be, in this royal climate, so full of floricultural possibilities. Do our gardeners realize that there are over one hundred and seventy-five distinct varieties of fuchsias offered for sale by the best English nurserymen? The fuchsia is so well adapted to our coast and mountain climate that we should have every one of these in successful growth in the gardens of San Francisco, San Rafael, Saucelito, Oakland, Berkeley, San Jose, Santa Cruz, and wherever else this lovely plant will thrive. In the Island of Man, near the coast of Great Britain, the fuchsia is used for hedges, between the garden plots, and covers the rugged and mossy stone walls. It often grows to such a size there that it is like a small tree, and tea parties gather around the bole as though it were a cherry or acacia tree.

Every one of course knows that there are now both double and single fuchsias. The double last longer in bloom than do the single ones, but the flowers are not so abundant, nor are they so graceful. The doubles are certainly the most brilliant, and often the most popular, but a refined taste will choose its favorites from among the single varieties.

Double fuchsias are divided into two distinct classes, those with white corollas and scarlet tube and sepals, and those with dark purple, violet, or blue corollas, and scarlet sepals and tubes.

There are minor differences not worth an extended description. In some, for instance, the sepals are much reflexed, curving back in a perfect semicircle and touching the base of the tube; in others the sepals are nearly horizontal. Some of the dark section have the purple corollas striped with crimson and scarlet, or flecked with rose tints. The old and well-known Vainquer de Puebla is one of the standard double whites. It is a thrifty and handsome bedder, still, the color is not as pure as in some of the newer kinds. Mrs. H. Cannell is a great advance. In this the compact white corolla is fully an inch deep, with hardly a rose stain even at the base. Miss Lucy Finnis is a dwarf, and an exceedingly graceful variety of the purest white. English catalogues mention a dozen others of value among the newer double whites. The double purples are indispensable in a collection. The old Tower of London, Sir Colin Campbell, and Elm City are found in many gardens. Among the newer varieties are Avalanche, Striped Unique, Prince Albert, and Champion. The latter is now the largest double fuchsia known, producing blooms which will measure two and one-quarter inches across the corolla.

The single fuchsias are naturally grouped into two divisions and four subdivisions. If we look at color simply we may speak of the light corollas, and the dark corollas; but if we consider the shape of the corolla we shall find some with narrow, somewhat closed, bell-shaped corollas, while others have open, broad, saucer-shaped corollas. These last are very brilliant, and should be widely known. Both light and dark fuchsias occur in each class. We might add that some fuchsias have a long tube and corolla, while others are short, and this makes much difference in the appearance. Among the best fuchsias with white tubes and sepals, and scarlet with pink or white corollas are the Arabella, Covent Garden White, the Beauty of Swanley, Princess Beatrice, Elegantissima, a profuse bloomer and beautiful for small pots with which to decorate a dinner-table. Another class have scarlet tubes and sepals, and rose, mauve, or lavender corollas. The most beautiful of these is Swanley Gem, with half-open petals, wavy and graceful; petals rose-colored. John Bright has a lavender corolla; Day Dream is a rich mauve; Roderick Dhu has blue petals, and opens very large and saucer-shaped; Prince Alfred has white tubes and sepals, and purple corolla; Lord Warden has scarlet tubes and satiny violet-black corolla.

In some fuchsias of late introduction the sepals, tube, and petals are all of the same color. They are of robust habit, and extremely showy. A remarkable new fuchsia is Bland's New Striped. The corolla is a rich purple, striped regularly with rose, and it is very large and full. The most curious of the single fuchsias are the so-called yellow ones, such as Aurora and Polyhymnia. They are orange-scarlet, and attract much attention. Then, too, among the dark-colored singles we have Lord Falmouth, violet-blue; Albert Victor, very dark; Try Me O! inimitable, deep violet; Hercules, bright blue, and a host of others which our amateurs should possess.

One very interesting class of fuchsias is that with fine foliage, highly colored, and often as showy as a coleus. Sunray, Meteor, Cloth-of-gold, and Regalia, with their yellow, orange, buff-colored, or crimson leaves, and glossy stems, are worth a place in every collection.

There is a remarkable fuchsia known

as Erecta, in which the flowers stand erect above the foliage, and do not droop as is usual with the fuchsias. In places where the ordinary varieties we have mentioned are not hardy enough, the following will perhaps succeed: Globosa longiflora and Corollina, Fuchsia syringæ flora, and F. splendens, are different species, botanically, from the ordinary fuchsia, and they are charming winter bloomers.

The State Horticultural Society.—We are again forced to go to press before the meeting of this flourishing society. Its proceedings will be so fully reported in the daily and weekly papers that this omission works no hardship to any of our readers. We shall aim to present the gist of the best papers read before this society, as opportunity permits.

San Mateo Horticultural Society.—The Secretary, John Burr, sends us the following. Both articles named are filed for publication: "The quarterly meeting of the San Mateo Horticultural Society was held in Germania Hall, Redwood City, April 13th, John McLaren presiding. There was a good attendance of members present, and I think on the whole the meeting was one of the best we have had. There were two papers read, both of which I have enclosed—one by Thos. Wood on the "Cultivation of the Grape Vine Under Glass," the other by John McLaren on "Wild Flowers of California," with a very fine collection (all named) in the hall; also some fine specimens of carrots sent by L. McLane. I may state that the subject of Wild Flowers is a standing motion. It was also carried that each member should collect and preserve as many as he can find in the district where he resides, then to form a herbarium from the collection gathered, in connection with the society, which I have no doubt will prove very beneficial and interesting to the members themselves, and admirers of California flora. Our next meeting will be held on the second Tuesday of July, when the following subjects will be discussed—"Winter and Summer Pruning" and "Cultivation of Roses Under Glass."

Editorial Notes.

Flower Garden Notes.—We hope that many of our readers will test the tuberous-rooted begonias in their gardens this year. Plant them out in different exposures and let us know whether or not they are adapted to our climate. It ought not to be difficult to decide. It seems to be settled in England, that begonias are a valuable addition to the summer garden.

Salvias are interesting and useful for the flower garden, though not by any means what may be called dainty flowers. The following species succeed well: S. splendens, S. patens, S. bicolor, S. dulcis, S. obtusa, S. Grahami, S. Rœmeriana, S. cacalifolia, S. tricolor, S. canariense, and S. involucrata. These are all we think of at present, though there are a dozen or so of others worth planting among the shrubbery.

Calceolarias are perhaps occasionally seen in the greenhouses, but still they are almost totally neglected on this coast. The greenhouse varieties are not good for outdoor planting, but there are some shrubby species which deserve attention. The trusses of bloom on C. rugosa are very handsome, and it succeeds well in a sheltered nook. Of these shrubby kinds there is a white vine, also one with creamy-yellow flowers, and the better known kind with brown and yellow spots over the slipper-like blossoms.

In many places we are persuaded that Primulas would thrive on rock-work. We pet them, and seem to think that they will not endure outdoor treatment. The fact is, they need shelter from the full sun and from winds, but otherwise will grow anywhere. In addition to the well-known P. sinensis there are allied species of beauty—P. rosea, P. Cashmeriana, P. luteola, P. purpurea, P. erosa, and P. capitata.

These few hints in the way of trying new plants ought to be sufficient to start some one's ideas. Hardly two spots in a garden are alike in adaptability to the needs of any particular plant. A reasonable amount of moving about of plants is strictly legitimate. Somebody says elsewhere in this magazine, the rule of good gardening is, however, permanence. In the same corner, year after year, the violets of spring, clearest blue, and hid under quiet leaves; each spring the morning glories and the sweet peas springing up where the seed fell the au-

tumn before; always over the cottage window the white Cherokee roses creeping, the scarlet Trumpet-vine clinging, fast rooted to the wall. Conservatism is indeed a happy art; but with it we must wisely link slow change, well-considered progress. When plants grow old, and past their prime, we must replace them with others; and perhaps by study we can form new and more pleasing combinations of color and foliage.

THE COLUSA GARDEN, by the low-lying hills south of Williams, is a place we have often remembered with delight. We love to think of it as growing on softly, silently day and night, morn and eve, and being shaped more and more towards a perfect plan. There shall be roses of molten gold, of carven alabaster, of sunset crimson, of the rosy pink of the sunrise, first—gleaming on the Buttes of Sutter. There shall be lilies, tall, fragrant, waving their pale bells of frosted silver in the sweet twilight winds. The clematis shall wander over the porch and trellis; the brilliant amaryllis (loved in that garden) shall glow in crimson groups; and wee, bright blossoms, treasured in the realm of poesy, shall find refuge in nooks numberless. Then, too, as the years pass, other gardens will be planted in the neighborhood; the influence of this one of which we have spoken will grow and widen; and, widening with the growth of lilies and of roses, wisdom and refinement will more and more abide in the pleasant lands.

BLIGHTED GARDENS.—From Nevada County, away up in the midst of a land of mines, in the heart of the ancient mountains, where the rushing flumes, all winter ice-bound, are just beginning to break loose from their fetters, there comes a sound of mourning, and of much tribulation. The North Columbia fuchsias have perished; the tiny garden fenced about with pickets from the sawmill near by, is mournfully thinned out; for such losses not all the wild acres of early spring blossoms could quite atone. Truly the winters of this world are sometimes cold. But indeed the summer *does* come to us all, and not least to the dwellers in that royal mountain land which lies by the portals of the snow-peaks.

SEEDS FROM WASHINGTON.—Through the kindness of Representative Horace Davis we have recently received a large package of seeds which will be planted at Niles with all due attention and ceremony. The list includes the following: Vinca rosea, Livingstonea Chinensis (or Latania Borbonica), Hibiscus Coccinea, Cannas in variety, and seed of a fan palm, name yet unknown, which has fruited in a Washington conservatory. It is a pleasant thing to know that the Hon. Horace Davis is still as ever the firm friend of horticulture and rural development.

SANTA BARBARA ROSARIANS.—Two letters come to us, both from far-off, sunny Santa Barbara, waiting by her blue waves for the glad and surely coming days of growth and progress. Even as it came to wierd old adobe-walled Monterey, so by-and-by the magic of railroads will waken and develop Santa Barbara. Meanwhile, we are sure men and women are making lovely homes there, and it is a realm of flowers, a sort of horticultural paradise, on which may blessings attend.

Friday and Saturday, the 30th of April and 1st of May, there was a rose fair in Santa Barbara. The editor of the HORTICULTURIST received a cordial invitation, and indeed was even offered a diet of roses. If instantaneous ærial transport were only discovered, we should certainly have looked in upon the busy rosarians. As it is, we could not, but they must write us all about it. We note also the formation of a horticultural society in Santa Barbara. Let it work in harmony with our State organization. There ought to be fifty other county organizations in California, and some of these days there will be.

DR. YATES' CHEAP CONSERVATORY.—One of the articles in this number is worth the attention of persons who would like to have a conservatory, but who feel hardly able to build anything expensive. We have visited Dr. Yates' miniature establishment, and it is certain that he derives from it the maximum of pleasure at a minimum of expense. Such cheap conservatories ought to be counted by the hundred in Alameda County, and we hope to hear of others.

Pomological Notes.

THE EARLY WATERLOO.—Ellwanger & Barry's Fruit Catalogue for 1880 gives a colored plate of the Waterloo peach, now being planted extensively as an early peach. Some orchardists in this State are propagating it as rapidly as possible, hoping that it will prove a better market variety than the Briggs' Red May.

THE DYEHOUSE CHERRY, found growing among some English morellos in the orchard of an old gentleman named Dyehouse in Central Kentucky, many years ago. This cherry was observed to be of a different habit of growth, and soon coming into bearing, it proved to be a month earlier than its supposed parent, and superior in quality to that and all others of its class. It never entirely failed, and in seasons when Early May and all other sorts were killed the Dyehouse bore full crops. It was introduced to the public by H. T. Harris, an amateur horticulturist of good taste and jndgment, and has been tried in various parts of the country, and always, so far as known, with perfect success. It surpasses Early Richmond in quality and earliness, and in hardiness also. The color of the fruit is a bright glossy red. Size full medium, with the smallest stone of any known cherry.—*Prairie Farmer.*

STRAWBERRY CULTURE.—There might be a chapter written on this subject, but condensed. The main points are, good soil of a light alluvial nature, well prepared, as for garden crops, properly enriched, and if wet thoroughly drained. Usually the land needs water facilities so as to be irrigated several times each summer. Some of the best strawberries we ever saw were grown on red mountain soil where there was an abundance of water from ditches. Strawberries should be cultivated often so as to keep the surface mellow. In the summer one good watering is better than half a dozen sprinklings. Extra large berries can be grown by applying an abundance of manure in the fall, and also clipping out the inferior berries on a few prize bushes. Sharpless, Great American, Monarch, and Seth Boyden are good varieties to use in growing extra large berries.

FRUIT NOTES FROM THE CATALOGUES.—Ellwanger & Barry offer a new crab apple, said to be a cross between Red Astrachan and Siberian crab. They say it is very desirable for the beauty of the fruit. They have also quite a list of the Russian apples. Their decision after testing seems to be that they are not equal to our best apples, but desirable where a very hardy apple is required. They class Court Pendir Jaune de Nitka, Naliv Rishki, Repka, Titouka, Peter the Great, and Ostrowskoe as among the best.

So far as we are able to judge, the Japan pears and their hybrids are recommended rather cautiously, great emphasis being placed upon their fragrance and the vigor of the trees.

Transom Brothers of Orleans, France, describe a new cherry, called the Olivet. They say "this sort takes the place not occupied up to the present time. Nearly all the early sorts are sweet, amber or red varieties, with a limited fruiting season. The Olivet is large, globular, very shining deep red sort. The flesh is red, with a rose-colored juice, tender, rich and vinous." We judge this to be desirable.

Baltet Brothers of Troyès, France, offer a new pear, ripening from November to end of December, which they describe as very large and good.

The Glendale strawberry being a late variety is no doubt desirable to extend the season of this ever welcome fruit.

New & Desirable Plants.

[We shall glean from our exchanges and correspondence, notes on plants either new, or of promise in our climate. Our nurserymen are invited to send notes on any interesting plants received.]

NEW FUCHSIAS.—Dr. Godron is a free-flowering variety, a cross between F. Domiana and F. serratifolia. Its growth is dwarfish, and in its flowers, which are nearly four inches long, the tube is of a brilliant purplish rose, the corolla is orange-vermilion, and the points of the sepals are orange-yellow.

Jean Sisley is a fine winter bloomer; corolla, orange.

Flambeau has a short tube and a full corolla of enormous size; color, violet, shaded with azure, and striped with scarlet.

The Rainbow fuchsia is worth mention. It is a neat variety with variegated leaves, which leaves are blotched with rose, white, and crimson, on the light green ground. The flowers have carmine reflexed sepals, a carmine tube, and double white corolla. Miss Lucy Finnis is another valuable new fuchsia. The blooms are remarkably large, pure white, and double. The plant is of dwarf growth, and is one of the best for a small conservatory.

NEW CROTONS.—Croton Evansianus has trilobate leaves, and a general depth of orange, olive, and crimson coloring. C. Hawkeri has lanceolate leaves of yellow and green. Hanburyanus is a native of New Caledonia, has leaves about fifteen inches long and two and one-half inches wide. The colors are olive-green and rosy crimson. C. Mortii is a robust variety with dark leaves banded with golden yellow, and reticulated with the same color. C. Williamsii is red-tinted, and flushed with violet. The mid-rib of the leaf is yellow. C. Prince of Wales has drooping and twisted leaves, often two feet long, undulated, and marked in blotches and clouded waves by creamy tints and clear yellow, on a dark ground. C. Macarthuri presents the peculiarity of having many shapes of leaves on the same plant. Some being plain, others frilled at the edges; some narrow, others wide; some spiral, others incurved. C. Earl of Derby has three-lobed leaves, yellow stems and mid-ribs, the blade suffused with red. C. aurea-maculatus is of dwarfish growth. C. Mooreanus is banded with parallel stripes of orange on deep green. The margin of the leaf is also of a clear orange hue. In C. Bismarcki the leaf is fiddle-shaped (panduriform), and the leaves are yellow-banded. C. Disraeli has trilobate leaves. When young the predominent leaf-color is light yellow. As the leaf becomes larger this hue deepens. In mature leaves the margin and mid-rib are bright scarlet, while blotches of yellow mark the green of the rest of the leaf.

Reviews and Exchanges.

FERNS OF NORTH AMERICA. By Prof. Daniel C. Eaton, of Yale College.

We have received from the publisher, S. E. Casino, Salem, Massachusetts, this most valuable and charming work, parts one to twenty-seven inclusive. For one who has seen this work any praise of it would be as superfluous as painting the rose. To those who have not, we would say that the numbers so far issued contain in twenty-seven parts, eighty colored plates, each plate having from one to four specimens, accompanied in many cases by small figures showing the spores greatly magnified. There are also very full letter-press descriptions. So perfect are

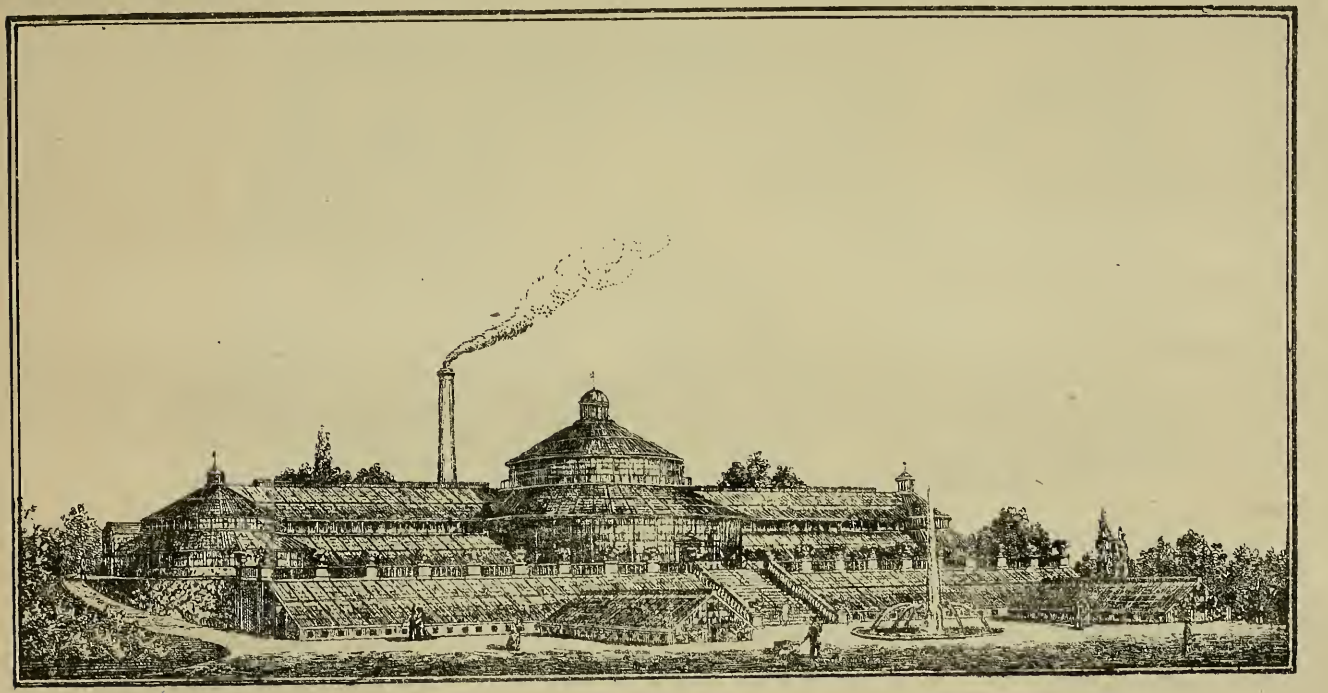
the plates, and so full and minute the descriptions, that they are certainly all that one needs to become "au fait" in the nomenclature of these lovely objects. The love of ferns is one of those things that grow by indulgence, and we think any one who spends an hour over these books will want to spend another, and then—another. To us as horticulturists, ferns have a special interest. They are adapted by their shade-loving habits to many places where no other plants will thrive. Halls where few direct rays of sunshine come may be beautified by their presence. In looking over these plates we find all so beautiful that we can hardly specify, but will mention some of the more peculiar. Lygodium palmatum, or climbing fern, called also Hartford fern, and used for ornamenting rooms in its dried state. Indeed, so much is it sought for, both for cultivation in conservatories and for ornament when pressed, that Prof. Eaton tells us the gathering became so destructive that in 1869 the Legislature of Connecticut passed a law for its protection. Prof. Eaton adds that this is probably the only instance where a plant has received special legal protection solely on account of its beauty. Lygodium scandens, another climbing fern from Southern China, is also much cultivated in conservatories. A very peculiar fern is the one figured on plate VIII, part III, figure 1—Camptosorus phizophyllus, or walking-leaf fern. This fern has fronds varying from a few inches to a foot in length, wide at the base, and gradually narrowed to a long and very slender prolongation, which is decumbent, or resting upon the ground, and which often takes root, thus forming a new plant.

Perhaps no fern in the collection is more beautiful than our own California Maiden's Hair (Adiantum emarginatum). The plate shows most beautifully the peculiar way in which the edge of the leaf rolls back and covers the spores. Indeed in all the plates the extreme care with which every part is delineated gives it the greatest value. The small figures introduced beside the large picture of the complete fern, giving a magnificent view of the spores, add greatly to the value of the work. An instance of this is seen in the Cystopteris bulbifera figured from a plant gathered at Brattleboro, Vermont. This fern does not differ widely from many other ferns, except in having on the under side of the fronds little bulblets. These consist of two, sometimes three or four rounded, fleshy, cotyledon-like greenish, or deep-colored masses, containing a rudimentary frond or two between their bases like a plumule. These bulblets fall to the ground and take root, producing new plants. One fern that we can not pass over without notice is the Acrostickum aureum or Golden Acrostickum. This is thought to be the only fern growing only within the influence of salt water. It is found in Southern Florida, and in nearly all tropical regions where the water is brackish, but never where it is fresh. Some specimens have stalks nearly an inch thick, and it is often eight to eleven feet high. It is certainly entitled to be called, as Prof. Easton calls it, the largest of all the ferns of the United States. We fear we shall find no stopping place, but we must mention one or two more. Plate LXXXI, figure 11, represents the Ophoglossum palmatum or Adder's Tongue. The frond is fan-shaped, cuneate at the base, and deeply lobed into a variable number of tongue-shaped segments, sometimes three, sometimes as many as eleven. Many of these segments are forked, no two fronds are exactly alike, and in many very odd forms appear. The way in which the spores are produced is also very singular. They grow in clusters hanging from stems along the base of the fronds. One more fern we must mention is the Osmundia regalis or Royal fern, plate XXVIII. Richly deserving its title it must be from the plate They grow in some localities in Great Britain ten or eleven feet high, in less favored localities, not more than two, four, or six feet. The specimen figured has twenty-five or thirty of these fronds in the cluster, gracefully curved, and forming a truly regal group. In Osmunda the spores are borne normally on contracted branchlets destitute of green leaf tissue. Prof. Eaton says this lovely fern is not found on the western coast of North America, for which we are sorry.

We have tried to suggest to your minds the pleasure to be derived from this work, but do not feel that we can do it justice, and therefore only add that we consider it a wise investment for any one whose purse can spare the outlay.

The Garden.—Every week the *Garden* puts in an appearance. It is the best of our horticultural exchanges. The plates make a person sigh for limitless means and endless leisure so as to cultivate flowers for pleasure merely, and indeed live in the midst of a garden. March 20th the plate was one of Gentiana Kurroo, a bright-colored flower, native of the Western Himalayas. The woody root stock throws up annual flowering scapes. In the flower the tube is yellowish-white, the corolla is a rich, ultramarine blue. The plate for March 6th represented Pontederia Azurea, a most lovely water plant. Then for March 13th we had Passiflora Vitifolia with its beautiful scarlet flowers. The reading matter in the *Garden* is fully up to the high-water mark of excellence. It is hard to say where any improvement could be made. Dozens of practical gardeners, such as T. Baines, J. Douglas, J. Groom, and others contribute regularly. Then, also, there are hosts of intelligent and enthusiastic amateurs, who narrate their failures and successes. We still think that the series called "Leaflets" are worthy of the highest praise; and we confess to taking rare delight in the rose articles written by S. Reynold Hole. Their literary finish, and their daintiness of touch, are simply superb. The *Garden* needs no praise from far-off California, but we would send a message to our English friends, across the space between, telling them that their work is appreciated.

No. 1 — Plan of Botanic Garden at Copenhagen.



No. 2.—Hot-houses at Botanic Garden, Copenhagen.

THE

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Contributed Articles.

THE HOT-HOUSES OF THE BOTANICAL GARDEN OF COPENHAGEN.

Translated by G. FRANCŒUR, for the "California Horticulturist," from the Revue de l' Horticulture, Belge, Brussels.

All the large cities of the civilized world are vieing with one another to erect palaces to sciences and arts. Horticulture, we hope, will have her day among us—that is, when the city of Paris will remove the hot-houses of "La Muette" or erect new ones at "Le Jardin des Plantes." Kew shows with much pride her splendid hot-house of palms; Gand has the winter garden of M. de Kerchove; Laeken, the magnificent conservatory of King Leopold, and Petersburg, the greenhouses of the Botanical Garden. The city of Copenhagen has recently erected a palace to the much-neglected art of horticulture, and constructed monumental hot-houses in the new Botanical Garden of the University. [The full-page photo-illustration in this number gives the general appearance and disposition of the garden.] Back of the hot-houses, and in front of the fruit-walls (espaliers), we find the experimental gardens, the hot-beds, and the aquariums; to the left, the squares set apart for the medicinal plants, annuals, etc., and the museum; to the right, on the lower level, is the astronomical observatory. Plate 2 represents, in elevation, the principal hot-houses. These descriptions are taken from the official account published in Copenhagen on the occasion of the fourth centenary of the University, in June, 1879.

The extent of the gardens is 3,200 feet. They are laid out on the grounds formerly occupied by the old fortifications, which, presenting irregular surfaces, were extremely well adapted to the different purposes required for a garden devoted to botanical studies. The configuration of the surface of the soil, instead of being horizontal, is undulating, and besides, having a more picturesque aspect, it permits one to dispose of each part of the grounds with better advantage, whether it be open or sheltered, dry or damp, and to satisfy both the conditions of culture and of display. The new botanical garden at Genoa offers, in this respect, a most remarkable disposition, where, in comparatively limited space, plants of the most different habitats can be seen in soils quite different and in positions entirely dissimilar.

At Copenhagen the avenues of the garden are wide and well laid out;

water is everywhere in profusion; the searchers after knowledge are as numerous as at the Kew Gardens, which latter being located several miles from London, registered in a single day in 1878, 57,121 visitors.

The Copenhagen hot-houses, which are the subject of this note, have a special interest when the particular conditions required by the climate of Denmark are taken into consideration. They have been erected on a plateau protected on the north by appropriate constructions and plantations. Their area is 2,400 square metres. They are divided into two parallel lines, placed on a different level, as indicated by figure 2. This disposition provides an excellent shelter for the lower hot beds, facilitates the work of superintendence, permits the heating of the whole with the same furnaces, and, finally, the terrace by which they are separated affords the propagating rooms indispensable for such a vast establishment.

In the monumental conservatory at Kew, as in all similar constructions, the roofs are curvilinear, and have, consequently, a more graceful appearance; but this form renders more difficult and expensive the establishment and maintenance of the double glass windows indispensable in these northern latitudes. In order to obtain a pleasing outline there are placed in the centre and at the extremities, circular buildings whose roofs are divided into triangles. The large hot-houses located in the upper story, are 94 metres in length by 19 metres in height. The lower story, reserved for small plants, is composed of two hot-houses separated by a monumental staircase which connects the whole range of houses together; each one is 30 metres in length by 4.40 metres in height. In order to facilitate the work, the two stories are also put into communication by interior staircases.

As in the hot-house of M. le comte de Kerchove, at Gand, cast iron only has been used for the principal columns. The metallic bars necessary for the windows have been encased in wood in order to keep them from the contact of hot air. All the hot-houses are provided with double glass windows. Iron pipes, heated by steam, have been inserted in the lower portion of the glass work to prevent the coolness of the interior windows and the formation of vapor on the glass, and also in order to melt snow as soon as it falls on the interior glass work.

In the cellars of the hot-houses are the boilers, coal bins, the orange house, places for plants, utensils, etc. The mode of heating hot-houses by steam was discarded some time ago by reason of the necessity of having a competent man continually in attendance. Steam heating gives too much heat to the plants placed in the immediate vicinity of the pipes, and unless particular arrangements are made, which can only be done in vast establishments, it has neither the security, regularity, nor stability of heating by water. But, on the other hand, it has many advantages which have been taken into consideration. In the first place, pipes of a much smaller diameter can be used, because they are subjected to a much more elevated temperature, and the pressure of steam admits the heating at a greater distance; and again, if necessary, it is possible to elevate the temperature in a much less time. About 1,900 metres of pipes have been used in these hot-houses.

The general ventilation of the large hot-house, in winter, and the uniformity of the temperature in the lower and upper parts of the rotundas, are ob-

tained by means of orifices open in the soil, and by canals heated by the steam pipes of the boilers. From this the hot air returns to the steam pipe placed in the principal chimney. Fresh air is obtained by openings under the terraces, and passes into a space reserved above the boilers, and then finds its way under the steam pipes into the hot-house. So much for the winter ventilation. In summer it is obtained naturally by the opening of the sky-lights from the domes, and also by large openings in the lower basement of the exterior walls.

We now arrive at the capital question in such constructions—the actual cost. According to the official estimate furnished by M. Tyge Rothe, the expenses were as follows :

The grounds on which the buildings are erected having been obtained by means of exchange, the cost of the building has been :

Hot-houses, hot-bed frames, and hot-beds	509,718 fr. 48
Dwelling-house	99,823 " 03
Fences and fruit-walls	34,563 " 23
Earth-work, water, sewerage	215,545 " 96
Plantation, etc	45,427 " 28
Museum, library and herbarium	165,000 " 00
Total	1,070,078 fr. 00

Thus it will be seen that the actual cost of the new botanical garden at Copenhagen is relatively moderate, and that, built according to the best plans of modern science, it is an honor alike to the government which made the necessary appropriation, and to the distinguished men who superintended its construction.

[For us of California the lesson of this work is evident. If so much can be done in that chill northern land, what may we not hope to do on these pleasant shores? Let us resolve to have a Botanic Garden in this State. Perhaps it will be a long struggle, but if we enlist for the war, we shall doubtless win, and have the priceless satisfaction of having inaugurated a work whose benefits shall continue long after we shall have passed away.—Editor Horticulturist.]

A FEW OF SAN MATEO'S WILD FLOWERS.

By I. McLaren, San Mateo, Cal.

Carpenter tells us that of all departments of science there is perhaps no single one capable of exercising such an advantageous influence on the minds of its cultivator as natural history. Not a step can the learner advance in it but he meets with wonders previously unsuspected; the more he knows the more he desires to know; and the further he advances the more does he perceive how much delight is yet in store for him. I think we ought to study this subject more in future. A good plan I think would be to get up a herbarium for our society, and let each and every member bring home specimens of any new wild flower he may find, have them dried, and brought to our meetings. If we only keep our eyes open and secure any plant or flower we think is wanted we soon would have a good county collection. San Mateo is one of the richest counties in varieties; I have seen already this year over one hundred in flower. The first I observed this year was the Manzanita (Arctostaphyllos tomentosa) in the redwoods; next the Leatherwood (Disca palustris), the small yellow flowers of which expand before the leaves; these two I saw in January.

In February I saw the Alder (Alnus viridis), two varieties of Willow (Salix Lasiandra and Salix Hindsiana), the Alfilaria (Erodium cicutiarium), the Big Root (Megarrhiza Oregana), the Solanum umbelliferum, one of our showiest spring shrubs; the California Cowslip

(Dodecatheon Meadia), Castellia foliodoso, C. parviflora, and C. linarifolia; the handsome blue Cynoglossum grande with its clear white eye and graceful panicles; the Senecio vulgaris, the Stellaria media, the Claytonia perfoliata, the pretty Calindrina Menziesii, the Lupinus Chamissons, a fine shrubby lupin that ought to be in every shrubbery, its tall blue spikes making a fine effect among evergreens; the Evening Primrose (Œnothera hirsutissima), the Sanicula arctopoides, the Sisyringchum Bermudianum, and the grand old California Laurel (Oreodaphne Californica), which I see by a late magazine has stood the late hard winter in England and is becoming a general favorite.

In March we have the handsome Ribes family—Ribes lephanthum (the smooth-stemmed Gooseberry) and the prickly Gooseberry (Ribes Menziesii), also the beautiful flowering Currant (Ribes sanguinuleatum), another shrub that ought to be oftener seen in our gardens, and it is so easily raised that all it requires is to cut off about eight inches of the young wood in winter and plant it where a shrub is wanted, and in two years it is a handsome flowering shrub. In shady places we have the Lilium aureum and L. album, the wild Hyacinth (Comassia esculenta), the false Solomon's Seal (Smilacina racemosa), and the Telema heterophylla, a pretty, white saxifraga-like flower. In Sherwood's Cañon Dr. Morse and I found the Scoliopus Bigelowii, a remarkable genus, with leaves 6 to 8 inches long and 2 to 4 broad, and beautifully marked with dark purple blotches; the flowers are of a curious brown color, dotted with purple, and lie flat on the ground after opening. In the fields we have the gay Eschscholtzia Californica, the Platystemon Californica—another gay poppy; the pretty blue Nemophila insignis, and N. aurita, a taller and darker variety than insignis; the Pimpernel (Anagalis arvensis), the Cardamine pratensis, the Shepherd's Purse (Capsella bursapastoris), the Vicia linearis, the Mimulus Douglassii; and towards the end of the month the Delphinum decorum, and D. Californicum, both gay larkspurs; the wild Pansy (Viola paniculata), the Yarrow (Acquillea milliefolia), the Clematis lygustifolium, the Madrona (Arbutus Menziesii), and the Chrysanthemum leucanthemum; also brambles, the Lupinus affinis, the Collinsia bicolor, the Myosotis verna, and Iris longipetala; then there is Fritillaria lancifolia, the Strawberry Fagaria Chilense, a variety crossed with Virginica, that has given us some of our highest-flavored berries; four or five varieties of Ranunculus, as many of the Crucifera, and at least a dozen grasses are now in bloom. Among ferns I found Aspidium aculeatum, Lastrea munitum, Cystopteris fragilis, Woodwardia radicans, Gymnogramme triangularis, Pteris aquilina, Adiantum Chilense, A. pedatum, Polypodium vulgare, Pellæa andromedæfolia, and Pellæa macronata—all handsome species and fit for any collection.

ON FOOT IN THE VALLEY OF MEXICO.

By D. S. Richardson, San Francisco, Cal.

I had a friend who felt just as I did on the subject. It is not the custom for any one but the Indians to go on foot in Mexico. As we preferred this mode of locomotion, however, it was determined to set custom at defiance. All have heard and read of the marvelous beauty of the valley of Mexico—its lakes and groves and villages—and the tall blue mountains—some of them snow-capped—which surround it in every direction. From the heart of the Aztec Capital one may turn his eye to

any point of the compass, down any street, and the perspective is bounded by mountain ridges, clean cut and clear against the sky. He may climb to any house-top and the vision which greets him on every side is one of enchantment, one suggestive of hidden, beautiful things out somewhere in the distance. My friend and I had yielded to this temptation on previous occasions, and had explored the valley to the north and east; but this direction had taken us along the railroad and through the more beaten and well known paths of the country, and we now proposed to turn our steps west and south, through unfrequented wastes of lava and cactus plants, towards a long row of baby volcanoes which had been blinking at us, and luring us on day after day for two long summers.

Our outfit was simple. It consisted of a rifle apiece and our blankets. These latter, together with a tin coffee pot and a few kindred items, were carried by our *mozo*, Jose, a stalwart Indian youth who had been with us on previous occasions and knew our eccentricities. We proposed to forage on the country as we went along, and our minds were fully made up to a week's diet on *tortillas* and *frijoles*, with such occasional egg or chicken as kind Providence might cause to fall in our way. My friend was very fond of these things. He could eat what the Mexicans call *chile bravo* and smack his lips over it; which being interpreted means that he could eat blue lightning. But I was more delicately constituted and looked upon unadulterated Indian "grub" as so much medicine. This was a consideration, however, which in no wise deterred me from venturing out upon the barren wastes.

It was a beautiful morning when we started. Not desiring to be seen in the streets of the city in our tramping costume, we took the earliest horse-car running outside the city limits, and six o'clock found us abreast of the Castle of Chapultepec and fairly under way.

The city of Mexico is not behind her sister cities on this continent in horse-car accommodations. There are lines running from the grand *plaza* to every point of the compass, and most of the suburban towns and villages in the intermediate neighborhood of the Capital may now be reached by rail. The cars are not dispatched over the line as in American cities, but trains are run, consisting of from two to ten cars, divided into first and second classes. The cars are not hitched together but simply travel in company. They are drawn, mostly, by small, wiry mules, and these are always driven at the top of their speed after getting beyond the crowded central streets.

The Mexicans have the name of being slow, but there are two things which I know of where dispatch is considered requisite—viz.: horse-cars and funeral processions. The former are driven on a dead run, and the latter are toned down to a trot. This, however, is digressing. My friend and I had taken the San Angel route. This line runs west of the city along the old aqueduct of *Belen*, three miles to the Castle of Chapultepec. Here it turns south and continues out through the pretty town of Tacubaya to a place called San Angel, about twelve miles from Mexico. The scenery along the whole line is picturesque and attractive. As you increase the distance from the city and approach the mountain rim of the valley you are constantly rising, and the view widens until it takes in almost the entire basin with its lakes and towns. One striking peculiarity of the city of Mexico is the fact that it has no sub-

urbs. It does not follow the fashion of American towns and permit its busy streets to dwindle away into country lanes, but it stops short on the plain. Between its edge and the next town, or mountain, is a well defined blank where not even a fence exists, and you are never left in doubt as to whether you are within or without the city portal. This way of building cities is evidently due to the insecurity incident upon revolutions and political disorder. It is not safe to be too far out. Mutual protection is also, or was originally, the motive for running the horse-cars in a caravan. The wily Mexican bandit thinks nothing of "going through" a stray horse-car if he can catch it a few miles outside of the city limits; but it is not so convenient to overhaul a train. The stranger in Mexico is also surprised at another thing which strikes him very forcibly upon taking a run of a few miles out from the city. An hour's travel takes him into a land where the comforts and refinements of the capital are unknown. A land without inns or road-side comforts. A land without beds, knives or forks, and where the half-naked Indian lives and thrives, pretty much as he did before the conquest. It was into this untried region that we proposed to make our excursion.

Dismounting from the train at San Angel, we struck boldly out in a southerly direction for the mountains. The highest point in the southern wall of the valley of Mexico is called *Ajusco*. It is an extinct volcano and is flanked on every side by lesser peaks, most of them with craters intact and presenting the most unmistakable evidences of the convulsions which at one time disturbed this region. Although the fires of these volcanoes have long been extinct, and their throats are choked and blacked up with a tangled growth of trees and brush, they must at one time have been the centre of terrific action. From the base of *Ajusco* a stream of lava flowed down towards the lakes and bent its course directly for the present site of the city of Mexico. It stopped short in its course, however, and the lowest point of the petrified stream now reaches down to the town of San Angel, where we left the car. This lava stream reaches down into the valley like a great stone tongue, and is several miles in width by about fifteen in length. It is called the *pedregal*, which means the stony ground, and is famous throughout the country for its rugged and almost impenetrable wilds. The honeycombed rock piles itself up in the most fantastic shapes, forming caves and grottos, valleys and peaks, and in the form and configuration of the whole one is reminded of a chopped and broken sea suddenly petrified and made stationary. Rattlesnakes by the thousands live securely in its dens and crevices. Thistles and thorny cactus plants make it their favorite dwelling place, and the hot sun broils down upon it making your eyes and head ache. For years this lava bed has been a secure retreat for bandits. Once hidden within its caves no officer of the law could hunt him out, and he could ambush his pursuer at every turn.

During the war of '46 the Mexicans relied on this natural barrier for the defense of their capital. They believed that nothing human could cross it. But they reckoned without their host, for a division of Scott's army made its way through it on the memorable night of the 18th of August, 1847, thus flanking the enemy's positions and bringing on the series of brilliantly fought battles which ended in the fall of the city. No one who has not seen the ground

can form an idea of the gallantry of that exploit. In broad day-light I have followed the path which our soldiers took that night. I have stumbled and fallen and snagged myself on sharp rocks and filled my body with cactus needles. With the utmost difficulty I have passed chasms and squeezed through narrow passes, and ever the one thought was predominant: How did our troops get through here in the night with their arms and equipments? It was a splendid feat, and one worthy of the daring soldiers who conceived it and of the brave boys who accomplished it.

On leaving San Angel we kept to the right of this lava bed, proposing to follow it up to its source, and get around it if possible. Our path was a mule trail and wound in and out along a stream of water which came dashing down from the heights far above. The natives we met eyed us curiously and questioned our *mozo* respecting our purposes and destination. The sight of two foreign white men tramping along on foot, and armed to the teeth, was a novel one to them, and we were looked upon with suspicion. Several times we passed through little villages or Indian settlements and the whole population turned out to see us pass. We did not feel altogether easy about this, for dark, sullen faces would glare upon us, and suspicious looking fellows would stop the *mozo* and question him. We knew that we were invading the bandits' territory, and had taken our precautions accordingly. Jose had a ready reply to all inquiries respecting our destination; but the boy's conscience was elastic, and the lies he told on our first day out would make a volume.

About noon we reached the town of Contreras where our troops first encountered the enemy after the midnight passage of the *pedregal*. Here the mountains narrow and the town is wedged in between the lava bed and the cliffs. The stream which we had been ascending now began to leap and fret, and on looking back we found that we had risen far above the level of the valley. It is a wild, rugged spot, and the vision below is indescribably beautiful. The town, however, is dark and dingy. It is beneath the cliffs, and fills the pass, and in order to ascend farther we had to pass directly through it. Idle men were lounging about, and naked children and frowzy women ran out of their huts to see us go by. We noticed that the men were all armed, and that ponies were tethered here and there in the brush, and the general character of the place was anything but reassuring; but no one molested us, and we passed quietly on up the mountain gorge. About a mile above this point we stopped and made coffee, and took our lunch, and a long rest. The afternoon was half gone when we were finally ready to move on, and it had then begun to rain. Our original intention had been to ascend to the topmost point of *Ajusco*, but as the clouds hung persistently about its crown, shutting off the view, and as the present indications were that they would not speedily clear away, we decided to abandon the ascent and turn directly east into the *pedregal* and work our way across it into the open country beyond. We knew that it would be difficult, but three hours later, when it was too late to retrace our footsteps, we knew the exact degree of that difficulty. Sometimes we would not make over a hundred yards in half an hour, and it was with the greatest labor that we picked our way over the jagged rocks and protected ourselves from the cactus thistles. About sundown we came on a little opening where

a few pine trees grew, and were surprised to find that it contained an abandoned hut made of brush and grass. It had evidently been built and used as a sort of way station by the Indian charcoal burners, who penetrate this wild region in the pursuit of their avocation.

As darkness was close at hand and the rain still continued, we decided to spend the night here, and indeed the discovery was a God-send, as we had already made up our minds that we would have to pass the night out on the bare rocks in the drenching rain. Throwing down our arms we all started off in different directions to collect sticks and fuel for a fire. I was using a small hatchet for the purpose, and had already cut down a large pile of dry limbs, when a painful accident occurred to me which for the time being made me sick and faint. In endeavoring to break a limb I struck my thumb against a snag and tore the nail off from my right thumb. Going back to the hut I crept inside and lay down. My friend and the *mozo* were some distance away and did not know of the accident. Suddenly a heavy step attracted my attention and looking up I found myself gazing directly into the muzzle of a double-barreled shot-gun held by a strange man. At his side stood a second individual, also armed, and my first impression was that I was confronted by a pair of bandits. Without stopping to consider that I was at their mercy if they had hostile intentions, I seized my rifle from the ground and was in the act of cocking it when one of the Indians spoke up:

"*No se ausute V. senor; no somos bandidos.*" (Do not be frightened, sir; we are not robbers.)

And then a reciprocal explanation ensued. The men were forest guards employed by the owner of the *hacienda* embracing these lands, to prevent the illicit cutting of the timber by charcoal burners. They were wild looking fellows in broad hats and *jorangos*—the latter garment being a blanket with a hole cut through it in the middle for the head. I had supposed that one of them had his gun bearing on me from the fact that he was carrying it muzzle foremost in under his blanket to protect it from the rain, and looking up I happened to glance directly into it. My friend and the *mozo* now came up and a long chat ensued. The strangers were hearty, good-natured fellows, and soon disarmed us of all suspicions concerning their character. They told us where we could find wood and water, helped us build up a fire, and insisted upon dividing with us their *tortillas* and a gourd of **pulque*, which one of them had slung to his stalwart shoulders. Furthermore, one of them bound up my wounded thumb with the tenderness of a woman, and with the craft of old woodsmen they arranged the grass roof of our hut so that it turned the rain completely. They told us that they were on their way down to the *hacienda* to report their day's proceedings to the *administrador*, but they would return early in the morning. If we would wait they would act as guides for us. There was plenty of game further up the mountain, and they knew all the trails and water holes. In addition to this they would bring us up more provisions and *pulque* from the *hacienda*, as they saw our supply was low. To these arrangements we gladly assented, and after partaking all around from a mys-

**Pulque* is the favorite beverage of the inhabitants of the table lands of Mexico. It is made from the sap of the *maguey* or century plant. In appearance it is white like milk, and after getting old it becomes stringy, and has a sour, disagreeable smell. Its intoxicating properties are perhaps a little less than that of beer.

terious black flask which my friend produced, the two strangers bid us good-night and disappeared in the darkness.

The hospitality of the Mexican Indian is a thing which I have never known to fail. This is more particularly true of the full-blooded mountain Indian, who is almost always a splendid fellow when treated with anything like consideration and decency. His hut, donkey, and his services are at your disposal, and he is ready and willing to do all he can to make your stay with him pleasant and agreeable.

In the case of our two newly found friends we found no exception to this rule. True to their word they returned early in the morning with provisions and *pulque*, and all that day they guided us about the mountains, looked out for all our wants, helped our *mozo* with his pack, and left us at nightfall safely across the *pedregal* at the hut of a brother Indian, with instructions to treat us *con consieracion*. For all this service they refused to receive any pay, and it was with the greatest difficulty that my friend and I induced them to accept a few trifles, such as a pocket compass, a knife, and some pistol cartridges.

Our first night had been an uncomfortable one, and our tramp for game without success. Several times we saw deer, and their tracks were numerous, but we never got near enough for a shot, and our game bag at nightfall contained nothing but a few rabbits and small birds. All day long, however, we had been ranging high up on the mountain ridge, with the ever-varying panorama of the valley of Mexico spread out beneath our feet. We had listened to the stories of our guides of the bandits and *pronunciados* who had made these wilds historic; and we had succeeded in wearing ourselves out so completely that the hut of our new Indian host seemed a palace, and the straw mats on which we cast ourselves were beds of down.

The next day we turned our footsteps downward towards the lakes. Chalco lay before us like a mirror, dotted with islands and long shady causeways, and we resolved to abandon tramping and paddle a canoe into its blue expanse. Of our experience there, however, and the trouble we got into, I will speak in some future chapter.

INDOOR CULTURE OF THE GRAPE-VINE.

By Thomas Wood San Mateo, Cal.

The grape may be successfully grown or forced either in a lean-to house or span-roof, and I have seen them grown on all aspects, but probably the best kind of house for early forcing is a lean-to, on a south or southeast by south aspect. I am speaking now of cases where the grape is the sole or chief consideration.

In the house, supposing it to be a lean-to, the front wall of which should be built with brick on arches, or what is better brick pillars, the top of the arch or space between the pillars should be a little below the intended ground level and the top of the brickwork a little above, and at the time of building is to be filled with masonry, the foundation of which should be deeper than the depth of what the vine border will be. The house should be constructed with the means of giving plenty of ventilation at both top and bottom.

The border should be excavated to the depth of from two to four feet deep, according to the means at command; three feet is a good depth for a border allowing at least nine inches more for drainage. The drainage may consist of broken bricks, lime, rubbish, or broken stones, with drain pipes laid through it

at intervals of four feet. The bottom of the border should have a gradual fall from back to front, and care must be taken that there is a good outlet for the drains. Whatever the depth of the border may be half of the said depth should be above the surrounding ground level, and the bottom of the border should be made sufficiently hard to prevent the vine roots from penetrating through it, which may be done by using the rough siftings of lime when making mortar, with the addition of a little extra lime ; it may either be placed on the bottom of the border and pounded down hard, or made into a moist state and poured into the border and let it harden itself. When hardened place a green tuft with the grass downward all over the drainage, then fill in the border.

The soil for the border should consist of a rich loam, which may be made up of one-half fresh cut turf, the remaining portion made up with turf which has been laid in a heap for twelve months. Old plaster or brick rubbish mixed with it to keep it open and porous, with the addition of half-inch bones; old woolen rags, and burnt oyster shells, are very good for mixing with the compost. The turf should be chopped with a spade and left tolerably rough, and the whole turned over and well mixed together previous to putting it into its place. If the turf can be got from an old sheep pasture or be brought in contact with manure while in fermentation, it would be better than using rank manure at the time of making the border, or if the turf can not be got, a rich, free loam would answer, mixed as previously mentioned. The compost should be thrown into the border, leveled as thrown in, and left loose. The vines should be planted near to the front of the house, and if previously grown in pots the roots should be carefully spread out and left as near to the surface of the border as possible, and after a few years, when the inside border is filled with roots, the brick-work between the pillars or in the arches may be taken out and a similar border made inside.

At the time of planting a vineyard it is often the practice of planting about double the number of vines that are intended to remain permanent for the sake of getting fruit from half the vines the first year or two, because we should by no means allow the permanent vines to fruit the first year, and very little the second, but after the third year good crops may be obtained.

The first year after planting encourage all the growth possible compatible with short jointed and well ripened wood, and at the winter pruning cut the vine back to well ripened wood. To what length the vine should be cut back to at the first pruning there is a great diversity of opinion; it is advised all the way from three to ten feet, but much depends upon the strength and ripeness of the wood. At each winter pruning afterwards it should extend three or four feet each year until the top of the house is reached, that is for the spur system of growing the grape. In order to form the spurs, the eyes in the one-year-old vine when commencing to grow would all form branches or shoots which are alternate up the stem. Rub out every second bud on each side, or rub out two and leave one, still leaving the remaining ones alternate; they will make branches which at the winter pruning are cut back to one or two eyes, which in course of time form the spurs. From the buds on these spurs the branches spring which produce the fruit. The rod system is another method of fruiting the grape-vine.

It is done by training a rod or two to the top of the house and fruiting them the second year. At the time of fruiting take one or two rods up each year, and at the winter pruning cut the two-year-old rods or those that have fruited away and let the young ones take their places. In getting a house ready for forcing, supposing the house is started between the first of November and the first of February, wash all the glass and woodwork on the inside; if washed with whale oil or soft-soap so much the better to destroy all insect life, also a coat of white paint on the wood and one of whitewash on the brickwork is good. The vines may have the old loose bark taken off, but as to the vines deriving any benefit from the operation a great difference of opinion exists; but anyway, the old bark is a harbor for insects to deposit their eggs and even secrete themselves in, so that by removing the bark it is much easier to destroy them. The vines may be painted with a mixture of whale-oil soap, soot, sulphur, cow-dung, and clay—the clay is added to make the composition adhere to the vine. Mix the whole well together to the consistency of thick paint, and work it well on to the vines and fill up all crevices in the vine. The mixture is put on with the intention of killing any insects on the vine, and as a future preventative for insects spreading or finding a place to secrete themselves in. The vines should be tied in a horizontal position to prevent the sap from flowing too rapidly to the extremity, and to assist the vine in breaking regularly all along its length. After the vine has commenced growing it should be tied up in the position it is intended to occupy.

Remove about one inch of the surface of the border soil, which has been hardened by treading or soured by watering, and carefully loosen the soil with a fork a little lower; then top-dress with a compost of good free loam enriched with fresh horse-droppings in the proportion of one of droppings to four of loam. Give the border a thorough watering, and close the house up. Syringe the vines several times a day until the growth has commenced freely, and keep evaporating troughs on the pipes supplied with water. Commence with a temperature of 50° to 55° nights and 60° to 65° days. With the additional rise of ten degrees with sun heat this temperature may be maintained until the growth has commenced, then gradually increase it to 60° to 65° nights to 70° to 75° days, with the extra ten for sun heat. Keep the floor or walk of the house damp, and on dull days dampen the surface of the border at least once and on bright ones several times a day, and syringe the back of the house at closing up time, which should be done with sun heat, still allow the house to become somewhat dry every twenty-four hours for a while. This heat and moisture may be maintained until the grapes are in bloom, then give a slight increase in heat or decrease in moisture. After the grapes have set resume much of the previous method.

Great care should be taken in giving ventilation. Never allow too rapid a rise or fall in the temperature, which has got to be regulated by the ventilation, and never crowd too much air on at once, but bear in mind that air or ventilation is given not to reduce the temperature of the house, but to prevent the house from getting too hot and to let out all impure air and gas, and to let fresh air in. The days when it is cloudy for a few minutes, then the sun comes out bright, are the most tedious to attend to the ventilation, still it must

be closely watched or bad results will follow.

When the vine has commenced growing there are always many more shoots than are necessary, many of which will have to be taken out, and gradually bring the remaining shoots to the position they have to occupy. This is a very delicate part of the business, because if left long without being tied down the leaves will be injured by growing against the glass, and if brought down too much at once, if the vine is vigorous, they will force themselves right off in a night.

Pinch the shoot off at two leaves above the fruit and the lateral shoot at one leaf. Great care must always be taken with the foliage. The leaf opposite the bunch must never if possible be injured, and the first leaf on the shoot from the spur, which leaf is invariably a small one, should never be injured, because from that leaf is the bud for the bearing shoot of next year, and much depends upon that leaf as to the future development of the bud. Care must be taken that the house does not get too crowded with foliage, but where there is a chance, such as at the bottom and top of the house, allow plenty of foliage to encourage more roots. As soon after the grapes have set as possible they should be thinned out, and often many bunches will have to be cut off altogether. Always when watering give plenty, and let the water for an inside border for early forcing be 70° Fahrenheit.

When the grapes are ripe give them plenty of ventilation, and of course reduce the temperature. If the house has been forced early, and as soon as the grapes are cut, give all the air possible day and night, and if convenient remove the sashes from the roof of the house altogether; and again for early forcing provision must be made for plenty of heat. There should be one running foot of four-inch hot water pipe for every thirty cubic feet of air or space in the house; and if the vines are planted outside, the border should be kept at 70° by hot water pipes underneath. I may here observe that great care must be taken in giving air in front of the house, as cold currents of air are liable to what is called rust the young grapes. Then again, use what care you will, the red spider will show itself on the foliage; a soft sponge will be needed to carefully sponge the leaves with until the grapes have stoned, then sulphur may be applied with whitewash on the hot pipes. It is also well to notice about the best time for taking superfluous foliage away; never do it when the grapes are in flower or stoning, because at each period there is little or no growth in the grape and the sap is bound to flow somewhere. Let the foliage have it for the time, because if given to the grape at either time it has nowhere to go but in the shanks of the berries, and often bad results follow, but after they have set or stoned they will take the sap.

The night temperature given is for mild nights, but for frosty nights always allow the temperature of the house to sink one degree for every two degrees of frost.

Grafting Carnations.—A writer in the *Deutsche Gartner-Zeitung* recommends grafting weakly and rare carnations on Saponaria officinalis. The root is the part employed, and as the graft is buried in the earth the scion itself often roots and becomes independent of the stock. It is only profitable for rare and costly sorts, and it is more conveniently done in pots placed in a spent hotbed.

THE RHODODENDRON WOODS.

By Charles H. Shinn.

Deep in the wonderful woods
The river Navarro flows
Through thickets of fern and rose,
And under the clinging vines
By vast and murmuring pines
In glorious solitudes.

There are bright, singing birds
In hollows, where the feet
Are lost in blossoms sweet
As love's remembered words;
And there are toiling bees,
And sleepy butterflies,
And gentle chirps, and cries,
From slopes of grass, and trees.

There—when no winds beat loud,
Nor is there sound to mar
The stillness, except, low and far,
The dim waves on their distant bar,
Nor motion but a sailing cloud,
I found a glorious flower,
Queen of its perfect hour,
And ripest beauty, when the prayer
Of hidden root, and conscious bud,
At last was understood,
And, trembling, in the happy air
The blossoms shone, while height on height,
Circled above its shrine.
Bravely the woods of fir and pine,
And royal cedars bent their might
To messenger the ferns which lie
On beds of sparkling moss,
And these fair pages cross
The little streamlet, bluer than the sky,
To nestle, in this golden hour,
Beneath the queenly flower,
And whisper at its clinging feet, and sigh
Those songs that, in earth's younger years,
Were known in fairy land,
And chime with laughter, melt with tears
For those who understand.

O blossoms, full of sunset gold,
And sunrise purity!
O sparkles that the full bells fold
As glimmers on a moonlit sea!
O purple dots that swim
Around the crimpled rim,
As stars that gather in the milky way!
O buds that peep between
The circling leaves of green,
And open with shy patience day by day!
I love you all, as children love
Their simple daily bread;
I seem to feel the currents move
From distant leaf and thread,
And sparkle in the gentle air
To color-waves, and blossoms fair.

Long, sweet Navarro, may thy stream
Linger around the pleasant isles;
Long may the rhododendrons gleam
Beneath the holy forest aisles;
Long may the tired wanderers dream,
With singing birds, and blossom-smiles.

[We have been asked to republish this.—Ed. Horticulturist.]

THE SANTA BARBARA ROSE FAIR.

By Mrs. N. W. Winton.

I wish we might have transported the readers of the Horticulturist in a body and set them down blindfolded in our floral halls, when the Rose Queen gave her reception on the 7th and 8th of May. They would have been the recipients of a royal welcome from her majesty, who, with her numerous family, were in court assembled to receive the homage due to their unrivaled charms. I have always renewed reverence for the Almighty Power—which evolved order out of chaos in the olden time—when I see it accomplished on a smaller scale.

On Thursday morning we were required to have our tables in readiness by ten o'clock, if possible—the latter clause for the benefit of our country friends, one of our best displays coming ten miles. At nine o'clock the most salient feature of the occasion was *unreadiness;* but many hands make light work, and we were fortunate in an able and faithful committee on tables and various preliminaries.

As each rosarian arrived there were but two questions asked. Is there a table for me? Yes; where will you have it? Here. That settled the whole matter. No favoritism. First come first

served, was the motto, and so there were no complaints.

A part of the display was shown in six ounce bottles, plainly labeled, with a full-blown rose just opened, a bud well developed, and two sets of leaves. Another and easier arrangement consisted in perforated standards; some rounded to place on round tables, raised from it by feet at the corners to accommodate tin tubes sunk after the style of ink wells, about a finger in length below. These, filled with water, and refilled each morning, answer an excellent purpose, the surface being painted a neutral tint and either sprinkled with moss or evergreen tips, thus throwing out the color finely. A fine floral centre-piece was added with good effect to each.

Another nice arrangement was a tin circular vase, with pyramidal additions, filled with moist sawdust. In this the bottles were sunk, and the roses in them kept beautifully. The lighter ones were at the base, deepening in color toward the top. Surmounting it was a bronze pedestal holding trailing vines, all very distinctly labeled.

Another floral piece worked in white "Flora Greets Thee," and the enterprising workers immortalized their names in scarlet on white ground below, bordered by a carpet of heliotrope. This was very beautiful.

Another was a shaded pyramid of Verbenas from deepest crimson—nearly black—to white, surmounted by a beautiful crown of fuchsias and other flowers. From the severely practical display of last season, making a business of roses alone—and only roses—unadorned, this season we adorned the train of our Queen with every thing of beauty within our reach, but greatly deteriorating the loveliness of all else. Only a flaunting Poppy, daringly brilliant in color, could hold its own. Not even the finest Pelargoniums or Carnations stood any chance by the side of a Cloth-of-gold or a Niphetos bud, or a Marie Van Houtte. Only a plate of delicate white Pansies held itself above competition. The table of acclimatized stove plants (of which I send you some lists) standing by themselves alone did themselves justice. In October we are to have a display of deciduous fruits, and all blooms save roses are invited to attend, which arrangement will be greatly to the advantage of the former. Of the private exhibitors Mr. Knight presented the largest number of varieties—seventy-seven—in bloom, has over one hundred on his grounds. I have undertaken to limit myself to seventy-five, which will I think cover the distinctive varieties, only adding first-class novelties from time to time.

We are promised blooms from the "American Banner" for next year. I think Mr. Henderson solved the problem concerning our "La Nankin;" it has proved itself a "sporting character," as the roses from it this season displayed at the festival were one-half white and the other deep yellow, wholly unlike the unique and beautiful display of last year. Mr. Spence exhibited one hundred and twenty-three beautiful varieties, and among them were two promising seedlings, one a climber, a blush rose of cup form, the other a standard, the same shade in outer leaves with salmon centres, not large, but very beautiful. Mr. Sexton exhibited seventy-five varieties, all choice in kinds. I think no one, owing to the lateness of the season, showed over two-thirds of their varieties. The Floral Committee found about two hundred and fifty varieties in culture here. Among the newer ones best worthy of note are Perle de Jardin, Perle de Lyon, La

Nuancee, Letty Coles, Claire Carnot (a fine climber), Marie Van Houtte, Niphetos, Horner, Mad. Marie Burton, Souvenir de David (the latter not new, but scarce and very good), La Jonquil, American Banner, and Mad. Pernet.

Mr. Calkins, who is building a beautiful home here, has erected a fine fernery for such specimens as require shade, and to acclimate very tender plants. He is making a specialty of Rhododendrons, Orchids, Ferns of rare sorts, Calceolarias, Coleus, etc. In his collection was a beautiful Stag-Horn Fern. In Mr. Spence's collection were some beautiful stove plants and others. Among them were Mediterranean Heaths, and a seedling geranium, "Dr. Dimmick," white margin, with bronze centre, excellent, and well named, as Dr. Dimmick was our best pioneer botanist, though he has found worthy successors; a fine plant of Coprosma Baueriana from New Zealand, fine Cyclamens, Philodendrons, Echeverias, Lophospermums, etc. Mr. Wyatt showed Thuyopsis, Camphora officinalis, Rhus succidenea, Indigofera, Corynacarpus Lavigatus, fine Dicksonia antartica, and many others. A Mahonia aquifolia was more admired than any other evergreen shrub; its glossy deep green leaves were used as a border to a flower piece on Mr. Ford's table, an exquisite one. A palette made of pink daisies with paint spots in lighter and deeper color, with this Mahonia border, was a dainty affair.

The Exhibition Committee had invited "blooms of fine quality of things common and uncommon." One response came in the form of a table of blooms of "other days." Nobody had seen the like since their childhood, and many never. In the centre was a dish of dainty tissue-like poppies, shaded in modern tints; behind them a tall vase of stately larkspurs, in variety of colors, flanked by a platter of intense marigolds; these relieved by a lovely vase of Star of Bethlehem, thin snapdragons in variety, and grass pinks. Not a label only a card lay on the table — "Old Friends." It only wanted a Jerusalem cherry tree, in full fruitage, to have been complete. As it was, no one seemed to miss it, and Mr. Holland's unique table was the most popular resting place there. To rest from the broad sea of color, borrowed from the depths of the ocean, from every standard treasure thereof, from sunrise, from sunset, from coral reefs, from the silver and the gold of earth's centres, and from the snow summits of her altitudes, nature knows no stint nor withholds her brush from royal tints to retouch her regnant queen and her numerous courtiers.

Yes, it was all beautiful, and yet we mean it to be more beautiful next year. A friend has just sent me a number of the *English Garden* which I have highly enjoyed, and also learned one thing about roses. In the autumn I shall remove six inches of earth from my rose border, replace with four inches of manure and cover with three inches of leaf mould, and after the heavy rains are over spade all in. I think it will be an improvement on our old way of enriching, and ought to make a fine spring blooming. Have just been making a Camellia bed by removing five feet and refilling with two-thirds leaf mould and peat to one-third sand, enriched from the chicken yard. A Camellia at Col. Bond's is six feet high and as many broad, and this is the sort of bed it grows in. And yet people will tell us here that Camellias and Azaleas will not do in the open air. I shall send some day, I think, an article on the "Sort of People Plants Grow for." We mean

to convince the State Horticultural Society that we *must* have a branch of the Botanical Garden here. Our Botanical Society have the two adjoining plazas given up to them, and are putting out a beginning and stand ready for the appointment.

I have left little room to speak of our Citrus display, but gave so full an account in the *Bulletin* of the 14th of May that it will be needful only to say that it was both a surprise and a success. Few realize how quietly and steadily we are working towards a first-class fruit country. We are not going to remain the subdued undemonstrative people we have been, neither are we wholly given over to horned cattle and horned toads, only a field for the drover and the naturalist. This Citrus Exhibition has created a marked interest, and there will be many trees planted this season of both the citrus and deciduous varieties. Apricots and nectarines to supply the demand will require to be planted largely. The canners have large orders already for these fruits. The crop will, our fruit committee report, be as large as the trees will bear of both these fruits — only an occasional failure. Peach crop will require unloading; others ditto. Grapes very full. Almonds in most localities are loaded. As this is an uncertain fruit it is being on many farms grafted to nectarines and plums with excellent results. Elwood Cooper estimates his almond crop to promise $6,000. When his 5,000 olive trees bring him their average of $20 per tree, and walnuts in proportion, his income will be royal. Elwood is kept like a garden. "Eternal vigilance" is its motto, and it is a fine sample of what intelligent industry will accomplish.

A dry atmosphere nourishes the red spider, moisture kills it.

BRIEF AGRICULTURAL NOTES.

Corn planting is nearly over.

Coal oil kills the woolly aphis.

The Tuolumne fruit crop is safe.

Strawberries are becoming plenty and cheap.

Salinas Valley crops are better than for years previous.

A Modesto farmer has 42,000 acres of wheat now nearly ready to cut.

A Pasadena gentleman had bananas growing in the open air all winter.

The voice of the mower is loud in the fields, and the rusty reapers are being repaired.

The west side of the San Joaquin will yield forty bushels of wheat to the acre this year.

Napa grape-growers kept frost off last month by making a heavy smoke over the vineyards.

At San Diego, recently, there was a Cloth-of-gold rose measuring 19¾ inches in circumference.

The brown Leghorns are among the best of egg producers, often beginning to lay at four months.

Dr. Ford is President of the Santa Barbara Horticultural Society, and Mrs. Winton is Secretary.

Ventura Apricots will bear heavily this year. The Carpenteria Apricot crop has been reported as light.

There is in San Mateo County a field of barley which averages six feet high, and is the marvel of all who pass.

The west side of the San Joaquin at last has a crop. The wheat yield of the State this year will prove unprecedented.

B. B. Redding says that the collect-

ing of lac can be made profitable near Stannix Station, sixty miles east of Yuma.

A good hedge may be made by sowing apple seed in the desired spot and trimming them into shape until they grow stocky.

In San Joaquin County one farmer reported seventy-one stalks of barley from one root of barley. Another capped this with a tale of 113 stalks from one root.

The botanists have determined under the laws of the science, that we must drop Salisburia adiantifolia, and say Ginko biloba when we refer to the Maiden Hair tree.

In order to dry figs take them after being properly sun-dried, place them in a sack, or better still a pan or vessel perforated at the bottom, then dip pan and all into scalding hot water in which borax has been dissolved at the rate of two ounces to a bucket of water, let the figs remain in the water three or four minutes, then lift them out, drain, and after a little drying, pack in boxes.

At this season the Grangers' reunions predominate. May 13th, at Lodi, the San Joaquin County Grangers had a celebration. Prof. Hilgard delivered a lecture, and there was a plowing match, also exhibitions of farming implements, live-stock, etc. May 27th, in Bennett Valley, Sonoma County, there was a similar reunion. Such gatherings do much good, and should be exchanged in every possible way.

In ancient Italy the berries and flower buds of the myrtle were used as a kind of spice; and the modern Tuscans and the people of Syria and Palestine still frequently substitute it for pepper. The bark and root are invaluable for tanning the fine Russian and Turkish leather, to which they communicate a peculiar color and perfume. In Italy the leaves are used by the people to tan the skins of their flocks, while the brush wood is made into brooms, and the stock and roots are used for fuel in many places.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

NOTES FROM THE MARGIN OF LAKE TAHOE.

Well! they are all here in a bunch, but none the less welcome. How good it is even to read of fragrant flowers after this winter, too long by two months—such a thing was never known before, so much cold and snow—perhaps it will never come again, so we will keep our courage up.

To really know just how to appreciate the HORTICULTURIST, wish for it every month for five, then have it come through the snow, so bright, fresh and inviting! I think anybody would have an honest blessing ready. When we opened the January number and came face to face with all those ferns, it made our hearts swell with joy, and our eyes run over. Just to think of page after page filled with the pleasant thoughts and experiences of plant lovers; it is almost too good to be true, but they are here, where I see them as I write.

The "beautiful snow" gets to be too much of a good thing when eleven and one-half feet came in April. You can do nothing but wait; it goes so slow when you want it to go so fast. The manzanita bells have shown a tiny line of pink. The catkins have burst their

scales. A few muffled up robins and blue birds make us think perhaps there will be some summer time and warm days by and by. I found a tiny plant growing beside an old log, close to the edge of the lake; it is so small I can not yet make it out. It will be a comfort to watch its unfoldings.

I have been the recipient of a tiny bouquet. "Kind heart" sent it over. There were rose geranium leaves, and one little flower, a scarlet fish geranium, and four white single petunias. I know how carefully they were tended, and how near the cold came to killing them outright. I can not remember ever having so much pleasure from a little bunch of bright blossoms. I hope to have a few thrifty plants in my conservatory before snow flies again.

In our visits to the coast from Monterey to Tomales, I gathered all the varieties of Algæ I could find, and they are many. I could not float them then, so they were dried from the salt water in the shade and packed. I found that if I washed off the salt water, the plants became brittle, and broke very easily. Now I float them as I have leisure, soaking in fresh warm water a few hours before I am ready to begin. I have always floated on oiled paper or tins and pressed under a weight. Some of the specimens are very fine in this way, but there are two varieties that are almost like jelly; they stick in spite of every effort. I will try floating them on card mounting. I think *that* a splendid idea for some varieties, but as many people only care for some little arrangement to frame, as a basket, wreath, cross, harp, heart, or bouquet, how can I arrange them if they are stuck fast in pressing? I have many fine specimens of Algæ from the Atlantic Coast. Some of them are real beauties; you can only see them. They are as tight to the paper as though painted on, and can not be detected by touching them; but some of the cards are streaked, so I thought they must have been floated as you describe. Perhaps they were not thoroughly dried before they were packed to send, at any rate I will try the method. Many of my specimens are very large, especially sea ferns from Pescadero. The specimens kept for my own collection are mounted on large sheets of Bristol board fourteen by twenty-two inches. Sometimes I get but one specimen from the lot floated that I wish to keep, and several specimens are put on one board. I think if I should dip it to float the one on the others might come off or leave streaks for each dipping. I would not like that, for my boards are very white and neat.

The prettiest specimens I have ever seen were floated by Miss Seddie E. Anderson, of Santa Cruz. There are no streaks on her cards, and one specimen to the mount. I should like the title and cost of a work that would describe and name my Algæ. Where is the "American Naturalist" published, and what is its price? [McCalla & Staveley, 237-9 Dock Street, Philadelphia; price $4 per year.—Editor Hort.]

If every one who has read the January number of the Horticulturist has derived as much pleasure and profit from its perusal as I, it certainly has sowed happiness broadcast over California, and the best of all is, it is mine for all future Januarys, if the house does not burn up. All our books and papers are good when they are new, but ever so much better a few years after, when we look them over again.

May 11th. Mary E. O. Wood.

How to Grow Cactus.—Editor Horticulturist—Dear Sir: A young man working in the mines sent to a friend in

the East some of the Cactuses, natives of the hot, dry soil of a California desert. Some months afterwards he received from his friend a letter saying "I have taken the greatest care of that thorny thing you sent, and kept it constantly watered, but it has died." Contempt was visible on that desert man's countenance when he read these words, and he said "I'll write him a letter and tell him how to grow Cactus," and he wrote thusly: "Put the Cactus as soon as you get it in a pot, put the pot in a stove oven, and shut the door; never let the fire go out day or night, and you will be able to keep up pretty near the same temperature as we have here where it grows." W. F. P.

San Bernardino, May, 1880.

HOW TO GROW FINE CALCEOLARIAS AND CINNERARIAS.

These are beautiful plants, the admiration of all, and of which there are as many varieties in color as there are in verbenas. The Calceolarias and Cinnerarias are both easily managed. For the window and conservatory there is nothing handsomer in its season when well grown. What I mean by well grown is when each plant is at least two feet in diameter and in a ten inch pot.

This can be done by adopting the following plan. Place from four to six inches deep of sifted soil in a pot or box to within one inch of the top. Press this soil down firmly with a board or the bottom of a pot. Sprinkle your seed on the top, but do not cover with any soil. Press the seed firmly with the same into the soil. Give it a light watering with a big fine rose, being careful that you do not wash the seed out of the pots or into heaps on the surface. We do this watering in what we term a swinging way, which is simply watering the ground and drawing the rose across the seed surface. By this means every seed is left in its own place. Then put a pane of glass on the top, putting the pots or boxes in some dark place until they germinate, as it is well known to all that seeds sprout quicker in the dark than in the light. When they show the seed leaf prick them out singly into the smallest thumb pots, or into boxes, potting in all stages in well rotted cow manure and yellow loam. The days of so much sand, and so much peat, and so much leaf mould, are gone. Your compost should be prepared twelve months beforehand. If not, cut your sod-soil four to six inches thick, put it in a pile and burn it the same as charcoal. This makes good soil. Keep the plants as near the glass as you possibly can. To grow them of extra size they should be kept in frames and within five inches of the glass. They require the strictest attention not to let them get pot-bound, the moment they become so they throw up the flowering stem and are ruined. Examine them frequently, and on the least signs of becoming so shift into another size of pot, breaking the growing ball around the edges and of the bottom. Give plenty of room, not allowing one leaf to touch the other, when in six inch pots. Use liquid manure, but no fire heat. A sure indication of good health is when dew-drops appear around the leaves in the morning. Here we can grow them without needing to cover them up with mats and straw by night.

The great enemy is the green fly. Persons having but a few plants can take a dry goods box, place some lighted charcoal and tobacco in a flower pot, and fumigate the plants. After fumigating immerse the earth of the pot in cold water, and plunge the leaves in the water by holding your hand on the ball of earth the same as when repotting

it. This should be done every week. By following these directions we shall see some fine grown Cinnerarias and Calceolarias at our California State Horticultural Society's Exhibition.

G. Howatt.

Botanical Notes.—California is to be favored this year with the presence of several eminent botanists. Prof. C. S. Sargent and Mr. Sereno Watson will visit the northern counties and Western Oregon during the summer, and it is probable that Dr. Engelmann and Dr. Parry may make an extended tour of the coast.

Mr. Vasey, a son of Dr. Geo. Vasey, of the Department of Agriculture, and an enterprising botanist, is in Southern California, studying the trees of that region for the Forestry Report of the Tenth Census.

Rev. E. L. Greene is reported to be on a botanizing tour through New Mexico, Arizona, and Southern California.

Mr. J. G. Lemmon has just returned from Arizona with a full portfolia.

Prof. Eaton thinks that there is no true Cheilanthes Fendleri in this State, and the California ferns heretofore referred to that species he now assigns to Cheilanthes myriophylla. Notholæna Grayi (Davenport), is the latest addition to the list of North American Filices. Cheilanthes viscida, the rarest of the North American ferns, previously found in the cañon of the Whitewater, is now reported by Messrs. Parish Brothers as occurring sparingly at Agua Caliente, in the same region.

The California Palm is no longer either a Prichardia or a Brahea, but is now established in a new genus as Washingtonia filifera (Wendl.). It is to be hoped that this name may be permanent, for no American tree is better fitted to commemorate the Father of his Country. It grows in dry cañons in the borders of the desert regions of San Bernardino and San Diego counties, where it attains a height of fifty feet and a diameter of three feet. There are reports of another species of palm near the Mexican border, but its existence is considered doubtful.

W. F. P.

San Bernardino, Cal.

Newcastle Strawberries.—We are in ecstasies over the appearance of our berry crops. Of course we are not in berries largely, except for plants. Besides raising large quantities of plants they are going to be loaded with fine berries. "Forest Rose" is the earliest, one of the handsomest and finest berries we have ever seen, large, immensely productive, and fine flavored. Sharpless, immense, good flavor, very productive; two rows of about one hundred each, planted last October, will yield one pound each of berries of great size. Seth Boyden's are lovely, large, and too full. Captain Jack, better than last season so far, and so on through the entire list. Yours,

C. M. Silva.

Newcastle, Cal., May 20th.

[We may here remark that of the dozen Sharpless plants received by us last year from the East and handed to a friend in Alameda, four survived the severe frosts, but these four produced over one hundred plants. We have tested the Sharpless, the Forest Rose, Miner's Prolific, and others. All are worth growing.—Editor Hort.]

BRIEFS OF CORRESPONDENCE.

M. C.—The roses you want are Bon Silene and Niphetos.

It is not yet too late to plant out Gladioli and Cape bulbs.

Slugs on Pansies? Use the bran remedy mentioned in a recent HORTICULTURIST.

There is a magnificent collection of blooming Azaleas at A. K. P. Harmon's, Oakland.

We are told that Carnations in a city garden began to perish, and lime dug in about them was recommended.

A friend says that her Japan lilies blight, and the buds fall off. They probably get too much sun, and the roots are not well protected. Mulch, water, and shade.

This is the *chat* corner department. For really enthusiastic letters commend us to those which come from busy flower-lovers just after they have had a successful Rose Fair—such as that of Santa Barbara, recently.

The rock-work most worthy of the name in all California is on H. P. Livermore's mountain home, northeast of Oakland. Natural ledges are made of an ideal beauty, and gleaming pools of water add their quiet charm.

A gardener at Woodbridge, San Joaquin County, reports the most gratifying success with Tuberoses, which were the admiration of all who passed by. The roots are left in the ground through the winter, merely protected by straw.

The owners of the friendly garden at Anderson, Shasta County, are hereby sent a word of greeting and remembrance. The editor treasures with a sense of endless and unalterable regard his memory of the plants in boxes, pots, pans, and buckets, the vines and shrubs, the gay and olden annuals carefully nursed, and moved from Cow Creek to Shingletown, from Shingletown to Anderson, in brief, from Dan to Beersheba. If those who, having good soil and every opportunity yet fail to plant flowers, but knew the labor which others, deeply in earnest, but sorely hampered by circumstances, put upon such gardens as this, they might well feel somewhat ashamed of their own carelessness. Not only in this Shasta garden, but in other places also, we have seen gardens which tell their own story of difficulties conquered.

Editorial Department.

THE FUTURE CALIFORNIA.

Dear to the heart is the Gospel of Hope, and each year its reasons grow more evident. Before our State, clearly possible, indeed almost certain, there lie achievements greater than any imagination has yet ventured to predict, and the fair fulfillment of many dreams is at last emerging from the mists of long doubts. This California of ours is to be a rich, prosperous, and beautiful realm, full of large and thrifty cities, busied with trade and manufactures. Acre for acre California, when our water supplies are properly husbanded, will support more people than does the same territory on the Atlantic Slope. Our farmers can raise food for quadruple the present city population. The villages of to-day must become towns, the towns cities, each city a great metropolis. That is the course of events outlined in the coming years, and to be known of all men before this century is finished.

In writing of California the hard thing is to restrain one's speech. Speaking in a merely material way, there is absolutely no discoverable evil to mock our hopes and blight their fruition. People will find homes here; men will grow rich. From the products of mines, farms, vineyards, orchards of olives and oranges, men will rear

shining palaces on the lovely hills about our bay, and along the southern coast. Santa Cruz, Monterey, Santa Barbara, San Luis Obispo, Los Angeles, San Buena Ventura, and San Diego, will each and all feel the new growth and strength visibly. To the prudent, frugal, and industrious among those who are here to-day, to the patient and hopeful, California has gifts enough in royal measure, full-heaped. Not absolute riches for all, but a competence, and some secure reward to each son of Adam. Fairer homes and swifter returns for labor are here than in other Saxon lands.

This, of which we have so far spoken, concerns physical progress and material development. Here, some day, there may be an artistic, musical, enthusiastic race, creative in literature, lovers of all beautiful things. Towards such a result the toiling and hidden forces of to-day appear to move with slow persistency. We are evolving something distinctively our own on this Pacific Coast. Let us toil for three hundred years, and gray Paris and London may come hither as Italy went to Athens. Stranger things than this the patient earth has seen, and the currents of men's affairs still ebb and flow as of old, planting cities on lonely isles, or folding deserts above king's palaces.

We may, however, be sure that unless we reverence truth and abide by law, not our resources, infinitely multiplied, nor piled up wealth of the mines from Oregon to Mexico, nor cities like Tyre, Carthage, Rome, London, can do more than add weight to our inevitable ruin. Unless peace and purity abide with us, and justice sits with true balance in the gates, our hopes are puerile, our visions mockery; we build on quicksands in the face of wild seas, beneath precipices earthquake riven. We need not doubt our material development. It is a visible fact soon to impress itself upon all people. But we do need to watch the foundations of our social existence, to honor men for their own sake, to fight what is vulgar and dishonest, and to find comfort in simple and healthy pleasures. Such work as this must be done by a sufficient number or there are valleys of humiliation yet to come.

FORM FERN AND FLOWER CLUBS.

Fifty counties; eight hundred thousand people; woods, ravines, valleys, mountain crags, barriers of rock, rivers and singing waterfalls—that is California. Now, if out of every one thousand people there is one single person who loves flowers, and plants of every sort, particularly the wild ones, which are much more lovable than those we pen up in gardens, why then there are eight hundred of such desirable people in the State at large (otherwise mathematics is a fraud). This proportion ought to hold good throughout. Shasta, for instance, with its eight thousand people ought to have eight plant-lovers. It should not be difficult for these folk to come to an understanding, and to form a flower and fern club. Each county ought to have one. The members would get acquainted through letters, and would keep up their knowledge of each other's work mainly in the same way. Then they might have an annual meeting at the county seat. In this way the native flora would soon be well classified, new species would be found, many collections would be formed, and an educational factor of considerable value would be added to the intellectual life of the county.

It is becoming more and more the habit of persons in country places to gather and classify specimens of the plants in their vicinity. Sets are then

exchanged with persons in other regions, and in this simple way a very complete herbarium is obtained. Often sets of rare plants can be sold, and even if this is not done, the knowledge obtained in gathering them is of a living sort, and is worth leagues of the mere reading of books.

The hope which sustains us who urge the outdoor knowledge of trees and plants, is that, though the beginnings are now small, still the time will come when the fresh and endlessly joyous knowledge of the hills, the sea, the forest deeps, the flower-spangled meads of spring, shall be, for young and old, an ever fresh delight. We ought to treasure the gillia, the pentstemon, the scarlet mimulus, even as the Grecian children welcomed the earliest anemones.

FORM A NURSERYMEN'S ASSOCIATION.

This is an age of associations and of combinations. Partnerships, companies, and organizations of every sort are the approved method of protection against fraud and rivalry. Indeed it were hard to find a single trade or profession, from the noisy boot-blacks to the stately physicians, where association is not an acknowledged benefit. School teachers have their institutes; ministers their clubs, presbyteries, and councils, Roman Catholic or Evangelical; in various associations the different schools of medicine and surgery wage terrific war; the scientific folk have annually their geological, social science, anthropological and numerous other weightily named congresses; of which thou, kind reader, hast doubtless heard enough already. But who, on this coast, has instituted a Nurserymen's Association?

For such a task there would seem to be reasons sufficient in the increased good will and fellowship among members of the fraternity, in the wider knowledge of each other's methods of tree-growing, and, perhaps, at times, in a united action when frauds on the business needed exposure or punishment. An active organization of the responsible nurserymen of this coast, strictly ruling out all doubtful persons, might be made a positive power in the land. It might have useful and interesting discussions on topics connected with trees, and it might thus disseminate a great fund of information not at present in the hands of the general public.

The only difficulty in the way of a protective league of practical force and usefulness might arise from the jealousies among the members, and rivalries of a business sort which might bring on internecine war and consequent dissolution. Still, we have faith that this might be avoided by the proper leadership at the start, and we should like to see the experiment tried.

THE LITERARY LIFE.

Curiously girt about by anxious inquirers, and strangely subject to misapprehensions is that occupation which consists in earning one's daily bread by writing articles, or by editing papers. If we may credit tradition there was a time, not many years ago, when great local fame attended the man and woman who was rumored to be an author, to have written for the *Weekly Skaggsville Tatler*, or even by rare good-fortune for the *Knickerbocker*, that mild-flavored and somewhat sentimental magazine of the days before *Harper's* and the *Atlantic*.

There are so many authors now that the business has become a mere practical way of making one's living. Glamour about it there should be none; the

romance is departed, and the sooner that impressible young persons recognize this the better it will be for them and for their friends.

Literature offers few large prizes, but many lesser ones. The newspaper field is widening daily, and the magazines are each year better. Journalism has been the training-school for many of our best writers, and the editorials, reviews, and criticisms in leading papers are often good enough to rank as real contributions to literature. The best work which a man is capable of is not too good for the modern newspaper, reaching, as it does, the homes of thousands while the events of which it treats are yet fresh and interesting.

The strange thing to one accustomed to look over much manuscript from young writers is that so large a proportion of the articles are useless and worthless. This is a hard saying, but it is true. The literary work done by many would-be writers is so faulty that it is no light punishment to be compelled to read any portion of it. This applies more particularly to poems, sketches, stories, and essays. When persons write on a practical, outdoor topic, such, for instance, as horticulture, they are apt to say something worth the heeding. But misty, not to say foggy, subjects never brought a young writer money nor fame. The sorrow unspeakable is to see, as so often, young men who might be good blacksmiths, saddlers, wood-choppers, plow-boys, sheep-herders, wasting their precious days in writing ungrammatical, unreadable, unmarketable sentences, which no editor reads, no paper of importance prints; to see young women who might plant pansies, train roses, make butter, press fern leaves, invent housekeeping decorations, be home-brighteners for the dear parents and mayhap mothers of a fair race hereafter, but instead of this, being led by vanity and lack of self-knowledge, to write rhymes of such frail nature that no one of all earth's children is helped thereby.

If these words come to one who, conscious of having somewhat to say to this daily world, is making ready for fit and plain utterance, let that person be sure that this warning is only meant for those hasty, unprepared recruits whom we would fain save from inevitable disappointment, and long sorrows of hopeless aspiration—unfruitful, unrecompensed. Who shall say why, in any state of society, people who can not think clear thoughts, nor write pure English, nor vividly or even truthfully express themselves, do nevertheless still hunger after the toils of authorship? If a man would raise potatoes, he does not talk of spontaneous generation; he obtains land-right, seed-potatoes, and a spade. With some heed to the weather and season he plants his potatoes, and there is somewhat of a harvest, dependent mainly on the richness of the soil, and on his diligence in weed-killing. But some of the people who are anxious to become writers, plant themselves at midnight windows, moonlit, and nearly moon struck, there waiting for a so-called divine afflatus, or impulse, or sense superior, and there they wrestle with imaginations countless and undirected, thinking only of writing a poem, not shaken by strong forces, hearing loud voices.

Let whoever desires to become a writer stop and think quietly—"Is this my hunger because I would widen my nature, year by year, knowing what others have done, loving and reverencing, and studying with tireless patience the work of the masters of human language; and do I judge, in all simplicity, that by hard yet glad labor (and only

so) I may speak to others of what I have myself found, have myself understood?" If to this, with flushing cheeks and flashing eyes, it may be answered "yes," there is no more to say except "God-speed."

A VERMONT BOTANIST.

Now and then we hear of some one whose quiet, useful, honored life is a lesson of beauty and truth. I do not know of any stronger inspiration for young and old than that which comes from the example of such persons. The readers of the HORTICULTURIST will perhaps find food for thought in a brief sketch of a self-taught botanist who recently died in Battleboro, Vermont.

Charles C. Frost, was born in Battleboro in 1805, and lived in that town all his life. He learned the trade of a shoemaker, and for years worked at the bench, leaving it only to teach the district school a few terms. In 1831 he established himself in the shoe business, and spent in this quiet pursuit the last fifty years of his life. Simple enough, all this, and seemingly a narrow sphere for any son of Adam. But our environments are where we choose to place them. In this quiet town, this toiling artisan wrought his life out with brave strokes. He became a systematic student, and his scientific attainments, though seldom recognized by his townsmen, found full acknowledgment abroad. He became able to read scientific books in four languages. He made botany his chosen work, and in one department of botany he became the greatest living authority on two continents. He was elected a member of many scientific societies, and carried on an extensive correspondence. College professors and scientific men from the centres of learning came to see him, and found him pegging away at his work with quiet, unassuming good-nature. He worked and studied all his life, collecting a most valuable library of books, and no one ever heard him complain, or envy the rich, or worry over anything. As Carlyle said of one of his heroes—"He could consume his own smoke."

This is the story. Short enough, but is it not suggestive? It took so little to content this man; yet, how royal a result he won with the rude elements within his reach. The gray rocks and mountain farms of Vermont, stern mother of hardy and heroic men, might well be glad because of such patience, such industry. Observe—this self-taught botanist asked for no help, sought no recognition from his townsmen, did not consider himself a genius, but simply studied for the love thereof. The lesson in all this is worth remembering. Whoever, chained to desk, or office, to bench or workshop, farm or village, grows unhappy, discontented, hopeless, angry, had best waken, and find refuge in freely-followed studies, developing thoughts and glimpses of the processes of unwearied nature. There is need, in each valley and town of this State, for science students. Let us find out more and more about our wild flowers, about our soils, rocks, wind-currents, and climates. Let us study the beetles, butterflies, spiders, shells, birds, and animals of each locality. This we should do not to win fame, but for its own benign sake. Long life, peaceful days, rich content, pure friendships, a noble simplicity of nature—such are among the gains of one who chooses to search these hidden ways by the still waters, far from the fret and clamor of those who seek for hard cash, even at the risk of getting hard reputations.

Don Mateo Keller intends to set out an immense vineyard on his ranch.

THE HORTICULTURAL SOCIETY.

The regular meeting of the State Horticultural Society was held May 28th, in this city. L. M. Holt, of Riverside, read the first paper, the subject being "Lemon Culture." He mentioned the Eureka, a chance seedling of great promise which was brought to the public notice. The tree is thornless, a vigorous grower, and an early, constant and heavy bearer. On orange stock the fruit is excellent, having good pulp, rind without bitterness, and has as large a percentage of juice and acid as the Lisbon. E. Wolleb, of Fruti Vale, next read a lengthy and valuable paper on the "Perpetual Garden." "Cherry and Apricot Culture" was announced as the chief topic for the next meeting, and Messrs. John Rock, of San Jose, and W. W. Smith, of Vacaville, agreed to treat the two branches of the subject. The minor subject is "Fuchsias." R. J. Trumbull, E. Wolleb, C. H. Dwinelle, C. Meyer, and Charles H. Shinn, were appointed a committee to provide specimens of plants and fresh notes on Fuchsias.

THE ENGLISH PRIZE ROSES.

List of 72 best exhibition roses as obtained by the election lists in 1878:

1. Marie Baumann.
2. Charles Lefebre.
3. La France.
4. Mad. la Baronne de Rothschild.
5. Louis Van Houtte.
6. Etienne Levet.
7. Alfred Colomb.
8. Marechal Niel.
9. Francois Michelon.
10. Marie Rady.
11. Mad. Victor Verdier.
12. Marquise de Castellane.
- * { Eugenie Verdier.
13. { Marie Finger.
14. Dr. Andry.
15. Comtesse d'Oxford.
16. Duke of Edinburgh.
17. Senateur Vaisse.
18. Duchesse de Vallambrosa.
- * { Ferdinand de Lesseps.
19. { Exposition de Brie.
- { Maurice Bernhardin.
20. Capt. Christy.
21. Reynolds Hole.
22. Xavier Olivo.
23. Marguerite de St. Amand.
24. Mons. E. Y. Teas.
25. Horace Vernet.
26. Camille Bernhardin.
27. Pierre Notting.
28. Catherine Mermet.
29. Duke of Wellington.
30. Star of Waltham.
31. John Hopper.
32. Emilie Hausberg.
33. Comtesse de Serenyi.
34. Dupuy Jamain.
35. Edward Morreu.
36. Fisher Holmes.
37. Souvenir d'Elise.
38. Souvenir d'un Ami. } Equal.
39. Mons. Noman. }
40. Mad. Lacharme.
41. Prince Cam. de Rohan.
42. Victor Verdier.
43. Marie Van Houtte.
44. Devoniensis. } Equal.
45. Duchesse de Morny. }
46. Beauty of Waltham.
47. Mlle. Therese Levet.
48. Sir Garnet Wolseley.
49. Hippolyte Jamain.
50. Abel Grand.
51. Abel Carriere.
52. Lord Macaulay.
53. Annie Wood.
54. Marie Cointet.
55. Duc de Rohan.
56. Mrs. C. Wood.
57. Mad. Hippolyte Jamain. (H. P.)
58. Niphetos.
59. Gloire de Dijon.
60. Jean Liabaud.
- * { Baronne de Bonstetten.
61. { Mons. Boncene.
62. Le Havre.
63. Devienne Larny.
64. Marguerite Brassac.
65. Annie Laxton. } Equal.
66. Belle Lyonaise. }
67. Royal Standard.
68. Miss Hassard.
69. Duke of Connaught.
70. Elie Morel.
71. Rev. J. B. M. Camm.
72. Auguste Rigotard.

* These roses with the asterisk attached and bracketed together are for the purpose of this election considered identical, and only one was allowed to be named.

[An enthusiastic rosarian of this city has kindly sent us the above list. It deserves a careful comparison with the French list, which is given in our Editorial Notes.—Editor Hort.]

From five to six years is all that any sheep can be profitably kept for wool or breeding.

Editorial Notes.

In the Hay Fields of June.—They are gathering late apricots and early peaches along the borders of Putah and Pleasant Creeks, in the orchards of Marysville, and in the ravines of Newcastle. On the wide plains of the Sacramento and San Joaquin valleys the ripe wheat will soon fall to the ground; the grass, cut for hay, is already in bright piles whitening in the sun—softly rounded hillocks which are so elastic that children love to run and jump upon them, much to the annoyance of some staid old farmers, who say that "it spoils the hay." But if men are so poor in sympathy for the innocent things of childhood that they can not overlook a handful of tossed and trampled hay, it were sad pity, were universal loss. Not least of the harvests of June is its intangible influence, refreshing and beautiful, drawing the children in June; footsteps, bound with chains of roses, and filled with ecstatic laughters, shy delights; new faith in endless successions of such mornings through many summers to be. We think of the busy, out-door world, and of the hearty toil of those who have the sunlight all day on their faces. May sunrise and sunset, noon and midnight, speak to them with audible message, bidding them build well, as we lay the foundations of our State!

Concerning an English Writer on Floral Topics.—This is a longer title than a paragraph ought to have, but it is hard to say it in shorter space. There is in England somebody who writes horticultural articles of peculiar merit—they appear in the *Garden*. They come every week, and are called "Leaflets." There is not any patent on the name, and still no one else's "leaflets" would seem so natural. It is not at all likely that this paragraph of friendly greeting will ever fall under the eyes of "Justicia," the leaflet man, but we none the less wish to express our pleasure in his work. The fact is, culture and enthusiasm of the right sort are always delightful to see. Justicia writes of trees, of blossoming plants, of gardens and lawns, of commercial nurseries, and bits of romance, gathered, we are sure, in varied and happy wanderings. His work is full of pictures; the blue seas glimmer along the Italian coast; the pale olives shine on the slopes of Parnassus; the Alpine flowers blossom close to the borders of eternal snow. Woven through these sparkling pictures there is a proof of the plainest common sense, the most incisive energy. In one recent installment of "leaflets," he talks of botanic garden curators and of botany lecturers; gives a certain critic of his a very fair counter-blast; corrects some popular errors about the Edelweiss; gives notes on Hepaticas, the Japanese Birch, Rhododendron Thompsoni, the blue Orobus, Daffodils, a new Anthurium, a rare Fritillaria, and the American Cowslip; chats about kitchen gardens, rockwork, Phylloxera matters, and a number of other timely topics. This is a pretty wide range of subjects, but they are handled in an unexceptional manner.

Garden Notes for June.—The blossoming season is fairly and fully upon us with shorter notice than usual. Two weeks ago, in the first flush of roses, we had showery weather which only hastened the culmination. Every sort of early summer flower began to hurry into sight. The usual laws of succession were this season disregarded. Expressive Pansies, shy-faced; rose, white, and purple racemes of Wisteria; radiant button-like buds of Anemones; belated Tulips and Hyacinths; early Lilies and Sweet Peas—such are a few of the revelations of June. Catalogues are dull reading. The true wisdom is only found out of doors.

It is hard to give hints for so rich a month. We are apt to let the work go, and merely enjoy the garden. But there are weeds to be pulled, and plants to be trimmed still. In some sections there is watering to be done. Indeed the grass plat should be watered regularly. In many cases plants will need tying up, and their rapid growth will keep one busy in contriving trellises and supports. Wood, nails, wire, a paint pot, and above all, some ingenuity, are needed to produce good and useful plant supports. For a vine, wire bent in the shape of a hollow globe or in balloon shape, forms a pretty trellis, and when covered with a blooming plant, nothing can surpass the effect. The wire should be painted green. Such a support looks well for any free-blooming vine. Another way is to make with wire an oval frame, or trellis, or to shape an arch of suitable size across some path. The many combinations and arrangements which are possible with wire render it an important part of the garden's outfit. The uses of wood for stakes and trellises are too numerous to need mention.

In gardens, as too often seen, there is a lack of neatness and proper arrangement. A few plants used and cared for, are worth more to the owner, and do more good to the world, than do some of those entangled and haphazard collections called gardens in some localities. The crying evil in California is the desire to cultivate too many acres, and this mistake is often made in garden and orchard also. We do not advocate a Dutch-like neatness, of punctilious deliberation. Geometrical gardens are usually hideous. But in the ideal garden waste and decay are not visible; cleanliness prevails, and over everything there is an air of proper proportion.

How to Train Roses.—*Revue de l'Horticulture Belge* contains an interesting artiele by Mons. Eugene de Duren in regard to training roses. He says: "Many roses produce their flowers in such a way that when one wishes to pluck a rose he is obliged to sacrifice at the same time a number of buds. To avoid this inconvenience it is well to tie the branches in a horizontal position. The result of this operation is

to develop the axillary buds and push flower stems, which are for the most part terminated by a single flower. The wise and lamented Riviére obtained by this method some marvelous results." M. Duren tells of some specimens in the gardens of the Luxembourg that are formed into a sort of grand circular table by having their branches tied down to stakes and forced to grow horizontally. He says these roses bear annually a great quantity of flowers, and mentions as some of the kinds that are so trained in the gardens of the Luxembourg, Glorie de Dijon, Pius IX, Malton Velours-èpiscopal, but adds that all roses take admirably to this method of culture, and says that parterres of roses thus cultivated merit truly the name bestowed upon those in the Park at Neuilly by the Queen Marie Amèlie—they are truly a turf of flowers.

THE GARDENER.—

From early March till April wanes,
And May comes with her jeweled breast
To beautify the woods and lanes,
The faithful gardener knows no rest.

Commencing with the morning light,
He labors on with cheerful toil
Until his spade as silver bright
Shines in his battle with the soil.

'Tis sweet to sow, and joy to reap;
And thus he thinks as day by day
Kind Nature doth her promise keep
With gentle shower and sunny ray.

Till from the teeming earth upsprings,
An earnest of his fruitful gains—
A resurrection of bright things,
And rich reward for all his pains.

—C. H. CAPERN, in *The Garden* for April 27th.

BULBOUS PLANTS FROM THE CAPE.—The bulbous rooted plants from the Cape of Good Hope and parts of South Africa are in many respects well adapted to portions of this State. It is strange that we have neglected the culture of so many of them. The Sparaxis, however, we have to some extent; S. grandiflora and S. bulbifera have cream-colored flowers; S. tricolor shows a wide range of colors, from pure white to red, orange, black, and yellow, in the curious mingling shades peculiar to the genus. Among the rarer Cape bulbs recently mentioned in the *Garden*, are the Babiana rubro cyanea, having deep blue flowers with red centres; B. stricta, with crimsom flowers; B. villosa, with scarlet flowers.

FRUIT FROM SANTA BARBARA.—Immediately after our Citrus Fair and horticultural display of our Santa Barbara friends, there was a box of specimen fruits shipped, charges paid, to this much overwhelmed and duly grateful editor. Better even than the fruit were the kind words of encouragement which accompanied the friendly gift.

The box contained dried apples, Flemish Beauty pears, and English walnuts, all from Mr. O. N. Cadwell, a well known fruit grower of Carpenteria; some loquats from Mr. Bond's orchards at Montecito; sweet limes, Acapulco limes, thornless lemons, seedling oranges, and other citrus fruits from Col. W. W. Hollister's fine ranch. There were also Italian chestnuts, Lanquedoc almonds, and a specimen of what was grown for the Havana sweet orange, but we are not certain as to the growers of these last. The care manifested in packing the box was in its way perfect.

Now as regards results. We do not own a foot of land at Santa Barbara; it is not probable that we ever shall, but we hope to watch its happy growth, its steady improvement, year after year. No one dries better fruit than Mr. Cadwell's exhibit shows the Carpenteria region to be capable of; no section of the State can grow better walnuts, and few can approach in quality those shown. The Italian chestnuts were small, possibly grown under local disadvantages; the Acapulco limes and the thornless lemons were pronounced by several gentlemen who are in the fruit business to be the best ever seen here; the sweet lime seems to be more of a curiosity than otherwise, and the same might be said of the sweet rind lemon. One of the seedling oranges deserves commendation, and should be named, the other does not appear to possess any particular merit; the Havana sweet orange is tasteless, light, and thick skinned, so it also belongs in the list of mere curiosities; but the citrus fruits show that they were, owing to the season, considerably past their prime, and, taking this into consideration, we may be sure that profitable oranges will more and more become a feature of Santa Barbara County. To this consummation may all bright things and living forces gently move! Portions of Santa Barbara are also suited to viticulture, and this industry we expect to see developed. In the new work of the swift years to come the Santa Barbara Horticultural Society proposes, evidently, to take a part, doing valiant work. We send them greeting and God speed.

ROSES BY MAIL.—The Innisfallen Greenhouses of Springfield, Ohio, have recently sent us an assortment of roses, which came through safely, and are most of them growing well. The reputation of this firm is first-class, and the roses they send out give great satisfaction. We gave away all the roses they so kindly sent us, and they are now growing in quite a number of San Francisco and Oakland gardens.

BALCONY GARDENING.—Under this title, a writer in the *Country Gentleman* tells us many interesting things. We are to use vines, such as Virginia Creeper, Clematises of various kinds, Wisteria, Passifloras, Honeysuckle, Jessamine, Japanese Woodbine, and many other rapidly growing vines. These should be planted in tubs or boxes, and trained to the balcony or fastened to the side of the house.

Maurandya and Tropælum vines can be grown close to the railing, and allowed to trail over, when the effect of their handsome flowers will be marked. Coleus, Lobelias, Geraniums, Double Petunias, and Fuchsias can be used in pots to decorate the balcony. Between the pillars there may be hanging baskets. Other pots may hold palm trees, Hydrangeas, and Oleanders. A long box filled with earth and plants may extend across the whole front of the house, and in this spring bulbs may be planted; after they cease blooming some Gladiolus and some Double Portulaca may take their place.

THE FRENCH PRIZE ROSES.—The Journal of Roses, published in France and devoted exclusively to roses, "has had the happy idea of organizing a sort of plebiscite" to obtain opinions as to the best roses for the amateur. Eighty-five lists were sent in, and from these was made out the following list of the fifty having the most votes:

La France	79
Baronne Adolphe de Rothschild	76
Paul Neyran	76
Gloire de Dijon	72
Souvenir de la Malmaison	72
Jules Margottin	70
Maréchal Niel	70
Baronne Prevost	57
Gen. Jacqueminot	52
Captain Christy	50
Belle Lyonnaise	47
Eugene Appert	47
Louis Van Houtte	47
Anne de Diesbach	47
Aimè Vibert	44
Souvenir de la Reine d'Angleterre	43
Charles Margottin	42
La Reine	42
Victor Verdier	42
Charles Lefèvre	41
Comtesse d'Oxford	39
Madam Boll	39
Gloire de Ducher	36
Madam Falcot	36
John Hopper	35
Madame Lacharme	34
Cècile de Chabrillant	33
Louise Odier	33
Marquise de Castellane	33
Celine Forestier	32
Elisabeth Vigneron	32
Boule de Neige	31
Madame Victor Verdier	30
Thèrèse Levet	30
Gèant de Battailles	29
Rose du Roi	29
Triomphe de l'Exposition	28
Elise Boëlle	27
Lord Raglan	27
Camille Benardin	26
Duchesse de Cambacéres	26
Lamarqué	26
Maria Van Houtte	25
Mr. Boncenne	25
Ophirie	25
Alfred Colombe	24
Empereur du Maroc	23
Jean Pernet	22
Madame Scipion Cochet	22
Chromatella	22

The figures show the number of votes given to each.—*L'Illustration Horticole.*

HANGING-BASKETS FOR THE SCHOOL-ROOM.—Some of the readers of the HORTICULTURIST are school teachers—some are yet school children, and this paragraph is for them. Do you remember, teacher friends of mine, the dusty, narrow rooms on wind swept plains, in narrow mountain valleys, where daily the children gather? Is it true, indeed, that you in every possible way make bright the lives of these young children, for many of whom life is already hard, narrow, loveless? Can not more, and continually more be done? Come, let us reason together.

Once, in the days which were, I knew a school-house, and about it, for it was on the cliffs, above the moaning sea and the white breakers, the voice of a measureless sea murmured, cried, raved, expostulated in keys various from merriment to vituperation. And, in the school-room, there was a black-board, pale and slippery, a table of yellow pine, a three-legged stool, some benches numerously whittled, a rusty red stove connected with the roof by a rust-freckled pipe, one old box, one mottled wash-basin, a bar of yellow soap, a tin bucket, and something which had been a broom ages before. That was all which made any impression on the stray visitors. When school-time came the teacher went to the door and called, the voice doing bell duty.

Now the person who taught here for a term or so was a young lady of considerable pluck, and day by day the school-room assumed a more cheerful appearance. The stove got blackened, and the table painted. There was a better wash-basin, and actually a new broom. Then came a hanging-basket. The boys made it, at noons, out of branches of pine. They took branches as large as a man's thumb, and built up, in log-cabin fashion, a rustic box a foot square, and three inches deep. Did you ever see a quail-trap made of sticks which cross each other at the corners? Then you know how it was done. Bits of wire fastened the angles closely. Meanwhile the girls, searching, had found moss with which to line the inside of the basket. Rich soil was next put in, and the basket was ready for the plants. Next day, from her boarding place, the teacher brought a scarlet-leaved Acharanthus for the centre, and a dozen small plants of the bright blue Lobelia for the edging. They grew beautifully, trailing over the rough pine branches, and hanging far below. The care was simple enough. Twice a week in summer the basket was dipped in water, and well soaked; it was moved about the room until the best place was found. It was the exciting cause of a fever of hanging-baskets in the whole neighborhood, and I have since heard that its final fruitage was a real school garden, set in a hollow of the windy slopes, and watered from a mountain rill.

THE NEW SWORD FERN.—We have recently seen a plant of the Sword Fern (Nephrolepsis Duffii). It has a graceful and rather drooping growth, and is much smaller in size than the common Nephrolep-

sis. Long and vividly colored runners grow from the base of the plant like the runners of the strawberry vine. The main fronds are branched irregularly into lesser fronds. Altogether, it is an elegant plant.

A NEW POMEGRANATE.—Somebody tells us of a double scarlet pomegranate with pure white edgings around each petal. It is as rich as a carnation or a double balsam. Is it in the stock of any California nursery?

JAPANESE CHRYSANTHEMUMS.—One of the things which we Californians have been woefully neglecting, lo! these many years, is the Japan Chrysanthemum. We have not seen a good collection of these large and showy flowers in the State. There are chrysanthemums enough, but most of them are of the Chinese or Pompone types. Yet there is, for the autumnal garden, no single plant more gorgeous when effectively massed in groups. The petals of the Japanese group exhibit a great variety. Some are curled, others sword-like, and curiously twisted, or quilled, or flattened, or in narrow filaments. Then the colors range from white, through rose and cherry tints, to crimson, deep purple, maroon, mauve, and yellow of different shades. Now, at this planting season, it is well to find a place in which to put a few roots of the best Japanese Chrysanthemums.

NEW COLEUSES.—It seems as if we were going to have a storm of new coleuses. Over fifty varieties are named in the catalogues of this year, and the English and American growers seem trying with each other for grotesque combinations of colors in the coleus.

New & Desirable Plants.

[We shall glean from our exchanges and correspondence, notes on plants either new, or of promise in our climate. Our nurserymen are invited to send notes on any interesting plants received.]

GEUM MONTANUM.—This sturdy and handsome mountain plant blooms in May, and should be much used for borders and rock work.

MAGNOLIA HALLEANA.—We have before spoken of this. It is one of the most beautiful and distinct of Magnolias. The flowers are three inches across, spotless white, and emit an aromatic perfume. It should be grouped with other plants in the shrubbery so as to hide the naked stems at the blooming season.

SAXIFRAGA WALLACEI.—This grows in close tufts. It has reddish stems, green foliage, and large white blossoms, at this season appearing in great profusion. The *Garden* recommends it for wild rock work.

KOROLKOWIA SEWERZOWI (FRITILLARIA).—This is a hardy plant growing about one and one-half feet high, with broad glaucous leaves and nodding flowers. It is a native of Turcomania, growing at an elevation of from 3,000 to 6,000 feet.

CHOISYA TERNATA.—This valuable Mexican shrub has fragrant flowers of waxy white, much like orange flowers. This would prove a hardy shrub for our California gardens.

GENTIANA ALGIDA.—This Siberian Gentian has a wide range in Alpine situations. The flowers are two inches long, yellowish-white, stained with blue.

ANTHURIUM ANDREANUM.—Among the remarkable plants of the past few years this ranks as one of the best, and has excited much comment. It was discovered by M. Andre, in Colombia, in South America, and sent to Europe in 1877. A plant has recently bloomed, and the English horticultural journals are full of notes upon it. This Anthurium is certain to become a great favorite.

NEW ORCHIDS OF INTEREST.—Among the novelties that the year 1879 has added to the list of this interesting family should be named the Cymbidium Lowianum from Burmah, the Dendrobium cerinum from Malaysia, the Pescatorea Gairiana from New Granada, and the Pachystoma Thomsonianum from tropical Africa.—*Revue de l' Horticulture, Belge.*

PROPAGATION OF CYCLAMENS.—Sow in an earthen pan in light garden mould which is a little sandy, in the latter half of the month of December. Place the earthen pan under the table of the greenhouse where the temperature is from 15 to 20 degrees centigrade. As soon as up, prick out the plants in pans. Leave them in the same greenhouse. When the bulbs attain the size of a pea, put them in little pots and place the latter in a hot-bed under a sash and as near as possible to the glass. Let them remain there during the summer, or until they attain such a size as to need repotting. At this last repotting (September) put them in pots of twelve centimetres diameter. During the month of October place the plants on the table of a temperate greenhouse. During the month of November the plants will begin to flower, and continue during nearly two months.—*Revue de l' Horticulture, Belge.*

A FINE DRACÆNA.—The beautiful Dracaena (Cordyline) Regis, figured in the last number of *L'Illustration Horticole*, is said to be the cross between D. Mooreana and D. regina, and is this year for sale for the first time. It is impossible to give by description an idea of the richness and beauty of the coloring.

ROSA POLYANTHA.—There is, in Japan, a lovely wild rose, with single flowers, of large size, fragrant

and beautiful. A rose-grower of Lyons has taken this and raised many seedlings. One which he names Madamoiselle de Montravel is certain to be popular. It blooms in clusters, the separate roses white, double, about an inch and one-half in diameter, and last in perfection a long time. The plant is a dwarf grower, unlike the original species.

Two New Roses.—With John Saul's catalogue there comes, this year, an excellent plate of two of the new roses. Jules Chretien appears to be a fine grower, and it is a wonderfully rich crimson, with much substance to the petals. Mad. Marie Van Houtte has salmon-colored buds, changing to a rich golden yellow, still suffused with salmon tints. Both of these roses are worth a place in every garden.

The New Rose, Madam Oswald de Kerchove. —*L'Illustration Horticole* describes a new rose, Madam Oswald de Kerchove, and pronounces it the most beautiful rose of the new year. It is described as vigorous, foliage of a clear green, well formed; color white, shaded to copper yellow; petals inbricated waved, the exterior ones remaining white, those in the centre of a beautiful rose salmon. Flower very fragrant. In bloom during all the season, and a novelty among hybrid roses.

Pomological Notes.

Recent Additions to Fruit Lists.—During the past year or two few really valuable varieties of fruit have been added to those formerly known. In pears, Ellwanger & Barry offer the Hoosic, an American seedling. There are a number of new foreign pears, among which may be named Anna Nelis, Belle de Beaufort, Beurre Alexandre Lucas, Madame Millett, President Mas. Of Japanese origin are Mikado, Daimio, and Madame Von Siebold. These Japan varieties are for kitchen use, ripen in the fall and early winter; are large and beautiful and well worth a trial. The trees are healthy and thrifty. Some varieties from China present the same general characteristics. Among the very latest European pears are Benediction, a large fall pear; Dr. Jules Guyot, a large summer pear; and Madame Antoine Lormier, a large winter pear.

In the line of apples there are many new ones. The crab apples have of late years been much improved. Most people by this time know the Hyslop and Transcendent. Among the newer crabs is Paul's Imperial, of English origin, a very handsome fruit. The new Russian apples are worthy of trial in the extreme northern latitudes. They would be admirable for places in the high Sierras, where the summer is short and the winters are severe. There are thirty or forty varieties of these Russian apples already introduced. In our English exchanges there is often some mention of apples little known in the United States. These are now being tested by Eastern nurserymen. Among them are the following: Amasia; Cox's Orange Pippin, regarded in England as the finest apple in cultivation, time, October to April; Duke of Devonshire, time, February to May. American seedlings not as yet widely known are Arnold's Beauty (Canada), a medium-sized yellow apple, January to May; Edgar Red Streak (Illinois), hardy, vigorous production, good quality, January to May; Stump, a handsome fruit, originating near Rochester, and illustrated in Ellwanger's last catalogue, fruit medium yellow and red, highly flavored, September to October; Sutton Beauty (Massachusetts), large yellow and crimson, good market fruit.

Among the really new cherries are Toronto, raised in Canada, a nearly black cherry, second early, fine bearer, and a very hardy tree. This will doubtless grow in the higher ranges of our State where the Tartarians do not succeed. Also from France we have the Olivet, said to be the best large early Duke cherry yet found, and worth testing for an early market cherry by our friends of Napa, Vacaville, and Marysville.

Considerable interest has been shown in the native American plums of the Chickasaw type. For those who can grow the choicer foreign varieties there is not much comfort in these poorer ones. We are not troubled with curculio here, and our plum trees are remarkably thrifty. But there are many farmers who want a hardy plum which will grow anywhere. For this purpose these American varieties are most useful. Put them by the roadside, or in fence corners. The following are good kinds: Dr. Caraduc, Langsdon, Miner, and Weaver.

The peaches of new introduction form a long list, but it is a comfort to know that few of them will ever be heard of again. Gov. Garland, a large, rich, early peach promises well. Conkling, a yellow-fleshed peach, succeeding Crawford's Early, is highly commended.

Reviews and Exchanges.

Practical Camellia Culture.—A treatise on the propogation and culture of the Camellia Japonica. By Robert J. Halliday, Florist, Baltimore, Maryland.

This is said to be the first book devoted entirely to the Camellia which has been published in either England or America. We have read it carefully, and find that it contains a multitude of practical hints and valuable information about the treatment of the Camellia. The work is a volume of 140 pages. It treats of the comparative advantages of single stocks grafted, according to the old methods, vs. Mr. Halliday's own plan of growing even the double varieties of cuttings, concerning which he says: "I believe that in the course of from five to ten years the double varieties of Camellias will be grown altogether from cuttings, just as the rose is grown now. Inarching and grafting will be with the

past." After devoting considerable space to this subject, the author gives careful directions about taking cuttings, how and when to root them and after-treatment, all copiously illustrated. He then discusses the growing of Camellias in pots and tubs, or planted out in the soil; he tells how to water them, re-potting, treatment while growing, pruning, use in window gardens and small conservatories, soil, fertilizers, insect pests and diseases, methods of packing to ship flowers or plants, and gives lists of the best varieties known to the trade. The work contains five handsome colored plates of choice Camellia flowers, and forty-three wood cuts illustrating various operations of Camellia growing.

Typographically the book presents a good appearance, except that we object strongly to the method of paragraphing used. Often for pages each separate sentence forms a paragraph. To be sure this is quite a popular method in many French books, but we can not see why it should appear in an American work. For the benefit of our readers we have extracted the following hints upon Camellias and their culture, and offer them here, though in somewhat condensed form.

Camellias are not usually found in good condition when grown with other plants. The foliage is yellow, the buds are few, and the plants have a dry parched look, probably caused by two much heat. This can be remedied by carefully syringing the plants once a day, or twice a day if there is artificial heat. If the temperature is too high the buds will fall off. Camellia plants are much benefited by being put out doors during the summer; put them in a place where they will have but little sun, and sink them to the rim in the earth; put them out on a cloudy or rainy day; take them in by the first of September. When they are making new wood they will bear more heat, say 70°. They should not be stimulated to make a second growth in the same season, as it will prevent their blooming, and they eventually become sickly. Do not leave too many buds on them; on small plants one bud to each terminal shoot will be sufficient.

Be sure when you water the plants to do so thoroughly, not just wet the surface. Do not water every day, but when you do water give enough to soak to the bottom. This does not contradict directions for syringing, as that implies only to the foliage. [Syringing the foliage should be done in such a way that the earth in the pot should not be drenched with water. This matter of dampening the foliage frequently is of great importance.]

In pruning good healthy plants cut all small and twiggy shoots from the middle of the plant, and cut back branches that have dead eyes to a good one. Sickly plants may be improved by pruning. Camellias require plenty of air.

One remedy for scale bug is water heated to 120°. Lay the plant on the side and syringe with it. Lime water is also recommended for worms in pots and insects on the foliage.

In conclusion we would say that in the climate of California Camellias will do finely out doors. They stand the winters anywhere around the Bay, and if put where they do not have too much sun will take care of themselves. This particular habit of theirs, viz.: not wanting much sun, adapts them to many of the city gardens, and we expect to see them largely planted there as soon as people come to realize their value for such situations. That sickly stunted specimen that you have in your conservatory if turned out in your yard would in a few years be a magnificent bush and give you hundreds of blossoms.

The Kansas Horticultural Society.—We are in receipt of a well bound and handsomely gotten up book of 339 pages, containing the Kansas horticultural report for the year 1878. It is numbered Vol. VIII, and is published by the horticultural society of that State. We think it exceedingly creditable to that State, and are much obliged to the lady who so kindly sent it to us.

A writer of the *Country Gentleman* recommends the Mexican black sugar corn as the best and sweetest variety known.

Catalogues, etc., Received.

John Saul's Plant Catalogue for 1880. Washington, D. C.

Field and Garden Seed Catalogue. W. B. Jones, Herndon, Georgia.

Select List of Seeds. Joseph Harris, Moreton Farm, Rochester, N. Y.

Plant and Seed Catalogue. C. E. Allen, Brattleboro, Vermont.

Purdy's Fruit Farm and Nurseries Catalogue for 1880. Palmyra, New York.

Circular of New Dahlias. G. G. Stone, Charlestown, Mass.

Wholesale Trade List. Farley & Anderson, Union Springs, New York.

Cole & Bros. Of Flower and Vegetable Seeds, Pella, Ohio.

Henry Nungesser's trade price list of seeds, New York.

Trade seed list of Adolph Haage; Erfurt, Prussia.

Proceedings of Massachusetts Horticultural Society, 1879; Robert Manning, Secretary, Boston.

Catalogue of small fruits. Princeton Nursery Princeton, Illinois.

Joseph W. Vestal's wholesale list of roses. Cambridge City, Wayne County, Indiana.

H. M. Thompson's Nurseries; hedge plants, evergreens, etc. St. Francis, Milwaukee County, Wisconsin.

Arnold Peutz's rustic work, plants, etc. Jacksonville, Florida.

Leeds & Co.'s Plant Catalogue. Richmond, Indiana.

THE

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Contributed Articles.

CURL-PROOF PEACHES FOR CALIFORNIA.

By W. B. WEST, Stockton, Cal.

The present season is such an anomaly in peach culture that it is worthy of a few remarks. Never in the experience of the oldest inhabitant has the curled leaf been so bad; varieties that were considered perfectly free from it have curled badly, and now stand almost leafless. The disease has been attributed to many causes; the most rational view, in my opinion, is "sudden changes of temperature." We have had a very cold spring, and excessively cold nights, often followed by warm days.

To the practical fruit grower the study of the effect is much more instructive than the cause. We find by experience that there are certain varieties that resist the disease much better than others, and a crop is sometimes lost by having kinds that curl badly; would it not be better for us to publish a list of such as are subject to it, and also such as are comparatively free from it?

Some ten or fifteen years ago, we had a series of years that were bad peach years, the leaves curled and mildewed badly, and many were disgusted with peach culture, especially upon the rivers. We had a list of those kinds that were considered good, but as some of the kinds have become obsolete or superseded by better ones, it would be well to make a new list. It is the duty of the Horticultural Society to discuss this matter and try to get the opinions of fruit growers in all sections. The peach crop has not heretofore been of much importance to our State, but the time is coming when it will assume a very different aspect. Our canneries are extending their business, but they have only just commenced. When they have learned the wants of the European markets their business will increase rapidly.

I have on my place an experimental orchard of peach trees where I have tested sixty varieties; it will not be necessary to name them all, as many are worthless, and others are not worthy of a place except on the grounds of the amateur. The soil upon which these trees are grown is a clayey loam. It is not perhaps the best kind for the peach tree, but is dry and trees are not subject to disease upon it. It may therefore be considered a fair test of the ability of the varieties mentioned to re-

sist the curled leaf. For convenience I will divide my list into three classes:

1st. Varieties that are not affected by curled leaf, and if subject to it do not lose their crop—Alexander, Briggs' Red May, Hale's Early, Yellow Rareripe, Susquehanna, Stump the World of San Jose, Newington Cling, and Smock's Free.

2d. Varieties that have suffered to some extent but still retain some of their crop—Waterloo, Strawberry, Lagrange, Picquet's Late, George's Late Cling, Crawford's Late, Amsden's June, Orange and Lemon Cling, Yellow St. John's.

3d. Varieties that have lost their leaves and also all their crop—Beatrice, Early Louise, Early River's, Princess of Wales, Pace, Ward's Late, Chinese Cling, Wilkins' Cling, Oldmixon Cling and Free, Heath, Salway, Morris' White, Crockett's Late White, White Imperial, George the Fourth, Thurber, Amelia.

It will be seen by the above list that peaches marked No. 1 and 2 are mostly from the Northern States; three of them are from California.

Number three contains varieties from the Southern States, many of which are of great excellence. I received a full assortment of southern kinds and they all seem to show feebleness of constitution and disposition to blight and mildew, but still some of them are of such delicate flavor, and great size, that they are worthy of cultivation, but they are not of much value, as their place can be supplied by better kinds of which we have an abundance. It is not so with some of the best, such as, for instance, George the Fourth, Oldmixon Free, and Cling, Salway, Chinese Cling, Morris' White, and other valuable qualities, will always be useful. But the chief demand in the future will be for large, rather coarse, kinds for canning, of which fortunately we have a good assortment, among which we can name the Foster, Crawford's Early, Susquehanna, and Stump of the World, as being the most reliable. After these come Crawford's Late, Picquet's Late, and the Orange and Lemon Cling. There are many others of the class of coarse yellow peaches of good size, which have been produced from seed in this State. I have one which has fruited regularly for twenty years. They are often found in old mountain orchards, where they have attained a local reputation, as being good reliable bearers. We cultivate in this State many varieties, perhaps too many, but if we can discard an unreliable kind, and grow in its place a better one, we are progressing, and this is each year being done more and more. For instance we have as very late peaches the Salway and Smock's Free. The former is of excellent flavor, but is not a reliable kind, it is subject to the curled leaf and mildew; it also loses much of its fruit just before it ripens. The latter is of good size, and not liable to disease, but the fruit is not of high flavor. If we could combine the good qualities of both in one peach it would be more valuable than either. There seems to be no white peach that can be relied upon as a good canning fruit. This is unfortunate, as they are much in demand in Europe.

It is of great importance that our peach cultivators bring forward their varieties that are not subject to this disease; that they discuss them in the Horticultural Society and publish the results in the agricultural papers, so that those who are planting new orchards may know what to select. If you have produced a seedling of merit which has been thoroughly tested (for

it is of no value unless it has sustained its character at least three years), propagate it and put it on the market. If you know of an old variety that has been uniformly good, make it known. Do not from any selfish motive keep a good thing from the public. The more good peaches that are produced in our State the better will be the price that the canners can afford to pay for them. At present we hardly supply our home demand. We ought to ship them largely to England and other parts of Europe.

RAMBLES IN A CALIFORNIA ROSE GARDEN.

By Mrs. Childs, Santa Barbara, Cal.

If any one of my hobbies gets ahead of the other it is the rose hobby always. I am just now enjoying the first flower on my Aline Sisley bush, and I wish all rose lovers could see the odd blending of color, and the deep wine or maroon centre. Mine is not very much like the description of the rose in the catalogue—in fact few roses ever are. I often feel as if I should like to go East and meet all the rose growers together and get them to describe their roses rightly, and be more careful in labeling them. If others are as discouraged as I am the dealers will begin to lose custom, for I have decided not to buy a plant until I first see a flower, and see if it is worthy; I have had so many miserable sorts sold me as fine that no amount of care and cultivation could bring up to good. Many poor sorts will do well budded that are miserable looking things on their own roots.

But about my Aline Sisley, it is a blending of pink and lavender color—some ladies would say an ashes of roses—outside, and suddenly shades off to the centre to a clear port wine, or maroon. The buds are a fine shape and last well, and the foliage smooth and pretty.

Another rose that I like decidedly is Souvenir de Madame Pernet. The petals are very thick and firm, shaded and blended salmon to dark rose, with warm reddish tints, and sometimes when full open, has tints of old gold. The bud is fine, cup-shape, and lasts well, unusually long in the half open bud, fine shaped plant. Another extra fine rose is Souvenir de David. I liked it best of all the roses at the Rose Exhibition this year. It is of excellent shape in half-blown bud, well cupped and inclined to be pointed, and petals large, thick, and rich; color a deep reddish-rose, deeply veined with darker color, base of petals darker than tips. A vase full of the half-blown buds is a powerful rival of the exquisite Pauline La Bonte, also of the Marie Van Houtte. They are three of the handsomest roses to me of all the two hundred and twenty-five that I saw together.

Triumph de Kennes is a very desirable rose both for shape and color; perhaps a trifle richer in color than the Isabella Sprunt, and a larger, finer bud, so far as I have seen both here.

La Nankin is a lovely rose, a blending of white and canary color about two-thirds of the petal, and a deep apricot at the base, and when fully open is the only true apricot-color of all the roses that I have seen that were described as such. There was a beautiful rose on exhibition here last year that the owner did not know the name of, and the committee could not decide on a name for it. I got a plant budded, and commenced to study it up, and from comparing catalogues and the rose, have become convinced that it must be Madame de St. Joseph, or St. Joseph, as some dealers label it. A friend of mine here calls it General de Tartas,

but it has too much of a salmon tint under the wine pink color to correspond with the General. What an illustrious family one can bring before them in their rose garden, but it becomes a painful duty to occasionally snip off General Somebody's right wing, or Souvenir de Madame Somebody's head or crown. For sunshine, water and all other favorable conditions keep things growing night and day, and almost keep us poor guardians of them at work for them the same. I went out and filled a large market basket from one side of a La Marque rose for a little fellow to decorate the school-room with this morning, and lamented that a long hot day should ruin so many beautiful buds.

The Duchess of Edinburgh is a splendid rose, a bright glowing crimson blended with a velvety darkness. Like many of the hybrid perpetuals both the bud and full blown rose are fine shape and last a long time, and the odor is the same as all the tea roses, the petals being large and firm and quite cupped, and very dark at the base.

Jaune d' Or is a very beautiful rose, a reddish-gold color edged and blotched with rich dark pink. The flowers so far with me have been rather small, but good shape, and last well.

Madame Dr. Jute is a novelty in roses, and a worthy one it is, as near as possible the color of a piece of copper rubbed brightly, a rich red and deep gold so mingled as that neither predominate; not a very large size, but good shape, and tea odor. All that I have described are bush roses, and nearly all quite low growing.

Claire Carnot is one of the prettiest pillar roses of the newer sorts—a clear light lemon with peach blossom centre, fine shape, but not very large, very pretty clean foliage. The plant on loose sandy soil is a slow one to start upward, but makes very good growth on stiff soil. Caroline Kuster is a more rapid climber and quite a novelty in color, rather after the style of Madame Dr. Jute in color, but not a very compact or good shaped flower. I am going to cultivate its acquaintance closely and see if I can not induce it to do better. Adrienne Christophle is one of the rather slow pillar roses, needs careful coaxing and training, is a deep salmon shade with quite distinct red centre, but has a bad habit of opening on some kinds of soil; it is desirable though, and will probably be better every way by budding it on a thrifty stock.

I do not care for a rose just for the color or any one point. Of the three points color, shape, and odor, every rose should possess all moderately or two of the points unusually excellent. I find that dealers everywhere are making specialties, and it certainly can not be very long before they will find out that their reputation for careful labeling and true description of flowers will be the only means of securing a large custom. If the Atlantic Coast growers would hold an annual exhibition of cut flowers, and compare carefully, and appoint committees of conscientious, painstaking persons that are really determined to secure the right name of the flower, and then attach the right label to the misnamed one, and let the grower change it on his grounds and in his catalogue, the next one sent out would show that they meant to profit by the experience gained. It would be no use to take specimen flowers carefully packed hundreds of miles and then drop the subject and forget to change labels and catalogues. Then our Pacific Coast growers could remedy their mistakes, and in time to come buyers would not have to complain of having six roses sent them from different deal-

ers and find the six nearly all alike under different names.

DRIED FLOWERS AND GRASSES.

By L——. Niles, Cal.

Editor Horticulturist—Dear Sir: I remember that last year you exhorted us to save dried grasses, straw flowers, etc., for winter bouquets. I did not at that time feel any great interest in the matter. What, I said, is the use, when I can fill my vases at any time with fresh roses, pansies, libonia, and chrysanthemums. But such a winter as we had has changed the aspect of affairs, and perhaps other of your readers may have had their interest in the subject increased. With your permission I will mention some of the things that are worth saving. First, of course, the grasses. Some of the loveliest of these come from the mountains, and are exquisite. I find them much more graceful when put in the vase to dry than they are when tied in a bunch and hung heads down. They keep their color better if dried in a dark place. The straw flowers may be had now of all the shades of red, pink, yellow, and white. The Rhodanthe has a pure silvery-white that is very beautiful. I find the straw flowers most satisfactory if picked in the bud. They open when drying, and if full blown when gathered fall to pieces. They dry better if tied in bunches and hung in a dark place. These two, grasses and straw flowers, must of course form the principal part of your winter bouquet, but you may add variety by pressing some leaves of the Centauræ or as it is sometimes called Dusty Miller. They press beautifully. The purple mist or smoke tree will give you a contribution, but as soon as the bunches acquire their color, place them in the vase where you wish them and they will remain pretty for months, giving a feathery grace to the cluster of dried flowers. I have also some clusters of the African Tamarix, gathered before fully in bloom, that keeps its color, and will, I think, be quite an addition. Dried ferns are very useful for the same purpose.

The seed pods of many plants may be used to give variety. That of the Centauræ is good, but the handsomest pods I know of are those of the Kolreuteria paniculata. This tree has large clusters of inflated seed-pods which are tinged when young with a rosy flush, and if gathered young they retain this color. I put a cluster over a picture last summer and it hangs there still, retaining its beauty all these months. If to the plants mentioned alone you can add some bright leaves, you may have a bouquet which will be a thing of beauty and a joy until the spring comes with its roses, and the collected dust on your grasses makes you glad to fill their place with the ever welcome rose buds.

PLANTS AND THE PLANT-FIEND.

By Wm. F. Parish, San Bernardino.

I do not know whether or not the following remarks will or will not apply to other parts of the State, but here it appears as if those who wish to test new plants have not the means, while those who have the means do not want to. Since I have been a resident of this place for eight years, I can call to mind no instance of any really wealthy citizen who introduced anything new or costly in the tree or plant line. The valuable plants here have been experimented with by men of limited means, who could illy spare the few dollars needed for their purchase.

Even when these ardent floriculturists have, after a long and patient nurs-

ing of the miserable little "plants by mail," half dead from their eight or ten days' journey, finally succeeded in raising a healthy plant or two and begun to fairly congratulate themselves that now their trouble was over—poor deluded mortals—it is time for the plant friend to make his presence manifest to the luckless gardener.

This friend (I am sorry to say it) is often a feminine one, who comes in asking for "slips," as if one took pleasure in mutilating his plants before they are fairly grown. Often, too, this is done merely to gratify the passing whim of one who can not tell the difference between a pelargonium and a petunia. I have known people to come into a garden, introduce themselves (being entire strangers) and, after looking over the place, coolly inform the startled owner that they "would come again when it was time, and get a supply of flower roots for their own garden." Others come, look, and suggest that they "would like some o' that flower," which may, perhaps, be the only plant of that sort in the garden. One little boy, I remember, said that his mother wanted "some of all that there was." I did'nt think that I could quite stand that, and so I sent him away with a load of petunias, antirrhinums, verbenas, phlox, aquilegias, and pentstemons. I well knew the fate of those gift plants, having sent others on the same road before. Not being taken care of they only live a wretched existence, and finally perish of sheer neglect. Some of them are killed by over watering, others from total lack of moisture. Another family comes regularly with two or three gunny sacks for their small supply of flowers.

The typical plant friend having begged a supply of stock proceeds to plant them out in hap-hazard style, here and there about the house, with a barricade of sticks erected about each one to protect it from the chickens. Each plant is drenched with water for a few days until a mud hole is established, and then the idea strikes them that they are using too much water, so they withhold it until the mud dries up into a hard adobe mass, fit only for bricks but not good for plants. A plant once placed in such a matrix of hardened mud has only one escape, and that is to die.

By all plant abusers let this advice be heeded: Dig a hole "neither as wide as a church door, nor as deep as a grave," but one that "will do." Put in your plant; fill nearly to the top with soil; put in plenty of water until the soil has settled about the roots, fill up with soil, and leave it alone. Don't souse a bucketful of water there in the evening, and another in the morning, and so on. Examine the soil first; see if it is becoming dry; take some in the hand and feel of it. If you can not learn how to judge for yourself about the condition of the soil in this way, then you are not fit to take care of plants, and had better not plant any, for you will have only toil and tribulation for your pains.

I do not wish to discourage any one from growing plants. Even the plant friend may get some comfort from the stray flowers they occasionally raise. I think, however, that exchanges are the most satisfactory system, and I often think of the proverb that "beggars must not be choosers." The plant friend must not expect us to give away our best flowers. They must learn to grow them for themselves, and when they become true lovers of flowers they will understand our advice. With the care of plants comes their love; with the love the knowledge; with the knowledge, still further desires to conquer in new fields.

[Though we have always preached and practiced the principle of giving away flowers and plants—and so, evidently, has Mr. Parish—yet the plain law in the matter is that one shall give away only his surplus plants. There is a limit and a reason to all things. If one finds that any particular person has been the recipient of many gifts and garden favors, fails to profit by them, fails to care for the plants he or she receives, fails to develop the plant-loving instinct, then, we are quite sure, the gifts may as well cease, for, in this wide world, others who care more for such things can surely be found. We are not called upon to worry over other people. If they do not care for gardens, their real loss is none the less by reason of their ignorance of the greatness of it. The sort of wealth which leaves nothing behind it except piles of brick and musty memories, is not a desirable possession.—EDITOR HORT.]

A LEAF FROM A BOOK.

There lies in my drawer an old book, leather bound, worn, and broken. It is full of notes, some in faint and nearly forgotten traces, some in firmer lines, whose meaning is not altogether glad. Because, through these months, O gentle reader, I have found you a mild recipient of my occasional confidences, I am now minded to go a step further (even as one who takes a friend into his own home), and in this twilight hour, while the stars glimmer over Mission Bay, write down for you some sentences which I find in the brown notebook of my boyish days.

First there is a fragment of what might have grown to be a song. I remember writing it in Oakland, one Saturday afternoon, when I was lying on what is now known as Adams' Point, looking across the blue lake, and the forests of oaks through which only a few roofs showed in faintest prophecy of the city which was to come:

Birds and blossoms and bees,
Bees and blossoms and birds;
The air keeps chime with the sound
And rustle of tiny words.

Cries and whistles and calls,
Calls and whistles and cries;
Now, for a moment, all glistens,
And the heart of sorrow dies.

Cold and pale is the world,
Pale and cold is the sky;
And hard and hungry are men—
Yet there is light by-and-by.

Next to this, only with toil to be made once more visible, and from many entanglements deciphered, there lies this boyish parable:

A VISION OF THE NIGHT.

"With the Speaking Leaf in my hand, I had gone forth into the wise world silently. The night about me wept; the listening trees looked sad; a phantasm of half-knowledge made all appearances tremble as on the verge of discovery, yet ever with mockery they fled. 'I am a lonely child,' I said, 'hemmed in by this vast machine of mystery, in which, long searching, I find no voice of affection, but only the endless flowing of a river born of darkness, into darkness proceeding.' Then sang the Leaf, in gentlest measures, waking a myriad sounds. I heard the click of magnetic needles, the beat of hammers on firm-based anvils, the quiver of vast wheels, and giant levers in Cyclopean workshops, the huge breath of metal-souled engines. It was as if these said, 'We fold no hands forever,' and all the heavens cleared a moment, then darkened with shame of insufficiency and dreams of ruin. Then, once more, the Leaf sang, as of old, full of fairest simplicity, and low-gleaming in the west were stars behind the clouds, and a pale face looked forth—a grand, sad face; a pale, suffering face; a stony, remembering face! World-face of promise, of passionate travail, of sons sent forth to battle, of sons brought stiffly back, of sons more than buried. O ancient heart of the world! I am astonished at thy perpetual force, thy ever-renewing youth, the deathless love which underlies thy inexpressible beauty. To help men is to follow thee. Then the Leaf trembled, and was silent, and yet it was a glad stillness."

Faded, on a yellowing leaf, where rain has left many a stain, I find these lines, which are the remembrance of a midnight moon, large and perfect, gleaming down upon a far-off garden, in a warm land, by a wide river which flowed past banks fragrant with roses, and through an old mining village with slant well-sweeps and pointed roofs:

THE RIVER-SIDE GARDEN.

Lilies white,
Fair lilies, fold your leaves,
Lest the low wind weaves
In the night
Some new spell of song
That is far too strong,
And you yield your light—
Lilies tall and white!

Ah! his wooing whisper's creeping
Thro' the village, quietly sleeping,
And the river's bringing,
Its low sense of singing
With delight—
Lily darlings! tightly fold
Silver curtains over gold,
Out of sight;
Then, sweet vestals pure and cold,
Dears, good-night.
Birds and sun may sleep together,
Stars and moon arrange the weather,
As is right.
Dears, good-night, good-night.

Lastly, as a fragment, of which all connecting links are melted into undecipherable ruin, the faded book yields, with almost a sigh, that which might have been written in some old quarry, dark-walled, and suggestive of granite dungeons, of dripping caves, of chains and of imprisonment:

IN WALLS OF STONE.

The grandest thing that a soul can do
Is to force its way through prisoning rock,
And rise against it in deadly shock,
Till the mighty walls are rended through.

Yea! cavern thou the base of thy crag,
Till the moist earth slides to reveal
The far, bright spot of a signet seal,
And a fragment of sky as a flag.

JULY THOUGHTS.

Did you ever think about the color of a voice? Complexion is a real part of other things besides faces. The sort of a voice which one hearing may love always has a subtle relationship to the pale pearl-hue of a sea-shell.

Into a letter to his friend a man may put the best and sweetest of his nature, so that, as he reads it over before mailing, there shall almost seem to be more of gladness than he really knew, and keener thoughts than he really felt. It is a pity that the art of letter writing is passing into decay. Fair were the stately letters of the days when sealing-wax reigned supreme. Now, we write notes, but who can find time for letters? It is said that a noble English lady, whose sons upheld the family name in the Crimea, and through the Sepoy rebellion in India, never failed in those troublous times to write to them daily, and they also wrote each day to her. Daily going apart mother and sons were in blessed communion; by affection's miracle brought within the compass of a heart-beat.

There was once a man who, in his ambitious youth, wrote a book, and then, after long toil, for he was poor, earned the money to publish it. Into the great world it floated like a leaf in September, and so went out of sight, leaving no sign nor voice. The man, seeing this, went back to his school-room (for he was a teacher) looking somewhat sadder, somewhat more gray and grim than before. Year after year passed with its inevitable changes. He stayed in the same school, and was a part of the same neighborhood. The boys who grew up under his care went out among men, and some of them became known in trade, politics, science, and

literature. Occasionally some would write to their quiet old teacher drawing from his stores of quaint wisdom and homely apothegm, but for the most part they thought little about him.

No words can express the simplicity of this man's daily life. He had a few old books—Montaigne, A'Kempis, Jeremy Taylor, Herbert, a few of later date —Wordsworth, Lamb, Emerson, Thoreau, Hawthorne. He wrote letters now and then to a few friends of his earlier manhood. He walked out among the people, and seemed to carry in his remembrance the well-being of the whole district. He helped those who were sick, tired, or troubled, in such quiet and shy ways that few could ever put their thanks into words. The time came that he fell sick, and when he found the end was near he smiled more than was his wont. According to his wishes they brought him the walnut writing-desk of his boyhood days, and from this he took the manuscript of his forgotten book, and a faded cluster of pansies, bound with white ribbon, and with these in his hand he died, smiling like a child. Then there were a few old men who remembered a fair maiden who sang in the village choir many summers before, and who for many winters had slept under the chilly snows, but in whose garden the purple pansies she loved still bloomed each spring. And, when all was over, like an aloe flower there blossomed in the hearts of men a sudden recognition of their pitiful loss; of the pure, simple, kindly, beautiful soul whose peaceful life was not useless nor weak.

In this July weather, when the sober streets have broken forth in an epidemic of animated straw and linen, one who suffers under cynical inclinations might go out and find abundant material of attack. Sad it is to observe how often a man who by dint of much home training from his feminine relations has arrived at years of discretion in the matter of felt hats, will shamefully and ignorantly crown himself with a hideous straw hat of many hues, and of much ugliness. There are satisfactory straw hats, but few men ever find them. Concerning this one would wish to apply Carlyle's white-waistcoat dictum: "It is permitted to men, under certain restrictions, to wear white waistcoats."

It does not cost much to say pleasant things to friends; but see to it that you willingly shoulder the responsibility of them. For, tacitly understood, folded under every kind word, there is a divine oath, a solemn compact, not likely to be taken, and at your peril to be broken. This hand, look you, laid warm in your friend's at meeting or parting, is this race-ceremonial, and dull formality, or is it indeed heart-clasp across the altar, in the presence of the eternal verities?

APRICOTS AND CHERRIES AT THE STATE HORTICULTURAL SOCIETY.

The regular June meeting of the State Horticultural Society was held at the usual place, No. 232 Sutter Street, on Friday, June 26th, and drew out the largest attendance of the year. The members were bright and active, and the proceedings were characterized by many interesting features. Owing to the unavoidable absence of Prof. Hilgard, the President, who is on a camping tour in Northern California, A. J. Hatch, of Cordelia, Solano County, took the chair. B. S. Fox, R. D. Fox, and A. E. Pomeroy, of San Jose; J. De Barth Shorb, of San Gabriel, and Rev. E. Verrue and Mr. M. Mahoney, of San Francisco, were elected to membership. The next subject taken up was one of much importance. The Direc-

tors of the Mechanics' Institute had invited the State Horticultural Society to take complete charge of the floricultural and pomological department of their annual Fair in this city, next September. The Board of Directors of the Horticultural Society, upon receiving this proposition, called a special meeting to consider it, and decided to accept the proposition. The Society's premiums will be indorsed by the Institute. The necessary committees have been appointed, and the work will be done to their best ability. The society urges all its friends to help it in its display, for the sake of obtaining the most complete exhibit that has ever been made in this city.

G. P. Rixford, of the committee to whom was referred a collection of lemons exhibited by L. M. Holt, of Riverside, made the report regarding them. The collection embraced sixteen different lots of fruit, including the Lisbon on lemon and orange stocks, from J. W. Wolfskill, of Los Angeles; the lemon of Genoa, from A. B. Chapman, of Los Angeles, and A. Brigden, of Pasadena; the Eureka on orange stock, from J. Banbury, of Pasadena, and Mr. Wolfskill; seedlings from J. De Barth Shorb, of San Gabriel, J. F. Crank, of Pasadena, and Mr. Wolfskill; the Olivia, from Geo. C. Swan, of San Diego, and Knobby, from G. W. Garcelon of Riverside—the last rotting before the trials were made. The committee found the lemon of Genoa and Mr. Crank's seedlings to be the most attractive in appearance; the former and the Lisbon and the Eureka containing too many seeds. Those coming nearest to all requirements for a first-class fruit, the committee decided to be the Eureka, Olivia and Lisbon. They believe that lemon growing will prove a profitable industry in this State, and that a fruit superior to the Mediterranean can be grown here.

W. W. Smith, of Vacaville, then read a paper on Apricot Culture, a portion of which we give from the report of the morning journals:

"The apricot is considered among our hardy fruit trees, and may be cultivated as an open standard tree anywhere south of the forty-second degree of latitude in the United States. The great drawback to its successful cultivation, however, is that it is so liable to the attacks of the curculio or plum weevil, its smooth, soft skin making it peculiarly subject to destruction by that insect; but fortunately so far here in California we are not troubled with that little Turk yet. Still we do not know how soon we may be. It, therefore, stands all fruit-growers in hand to be strictly on their guard and ready to meet and destroy not only this, but any insect pest that may threaten our interests. The soil best suited to the growth of the apricot is a deep, rich loam, having a good admixture of sand; in fact any soil that will grow the peach tree well will grow the apricot tree well. We incline to the opinion, and our opinion is founded on pretty close observation, that it will set its fruit better on a rather heavy than light soil; that is, too much sand in the soil has, we think, a tendency to make it cast its fruit while young. We would, therefore, prefer a tolerably heavy soil, with just sufficient sand in it to make it work freely and easily. The soil on which a young apricot orchard is to be set should be cultivated in some hoed crop the year previous to planting the trees; corn or beans are preferable to any other crop we can recommend. The cultivation given them leaves the land in the best possible condition to receive the young trees. Soil that holds stagnant mois-

ture should never be planted in apricot trees. Such a soil should be thoroughly underdrained before the trees are set, or rejected altogether. The apricot will do well on a heavier soil than the peach. The peach, the plum, the bitter almond and the apricot are all used as stocks on which to bud or graft the apricot. We prefer the peach for all our free soils and the plum for heavy or adobe soils. We reject the apricot itself, from the fact that the gophers work heavily upon it, and we reject the bitter almond because the apricot will not take well on it. Apricot trees should be one year old when transplanted to the orchard; dormant buds are preferable to two-year-old trees.

"The land should be kept thoroughly cultivated among the young trees. Some cultivated or hoed crop may be raised between the rows of young trees up to about the third year; then after that they should have the land entirely to themselves. By thus cultivating some other crop on the land it is kept in a loose, friable condition and free from weeds.

"The gum is the worst disease to which the apricot is subject. The remedy for this is, cut away all the diseased part to the perfectly healthy wood; scrape the wound entirely dry, and then coat the whole over with a solution of gum shellac, dissolved in alcohol to about the consistency of paint. This is the best preparation we have ever tried for covering the large wound made in all trees by pruning or otherwise. It can be applied with a brush in the same manner as paint. The foliage of the apricot tree appears to be almost entirely exempt from disease, there being no insect with which we are acquainted that seems to be fond of eating it. There has of late years appeared on the fruit a kind of rust analogous to the rust on wheat, worse in the vicinity of Santa Rosa than any other portion of our State. Some complaint has been made of late of parts of the trees dying while the remainder of the tree would appear to be healthy. This, we think, is all caused by the gum.

"In pruning we recommend the annual shortening-in system; that is, this winter cut away one-half or two-thirds (according to the amount of growth the trees make) of last summer's growth; but after the branches have been cut off there will still remain a number of laterals, or small side branches. These should also be cut back, say from two to four inches long; they will thus be converted into fruit spurs and a saving of one or two years is gained.

"Were we asked what fruit tree to plant for the most profit, we would unhesitatingly say the apricot. Our opinion is that in those portions of our State where the apricot does well there is no tree that fruit-growers can plant that is likely to return a more handsome profit for the labor and capital invested than the apricot. The leading varieties, naming them in the order in which they ripen, are the Pringle, Royal, Golden Hemskirk, and Moorpark."

James Shinn, of Niles, was called upon, and gave his reasons for believing that the apricot was a desirable stock for the apricot. A general discussion upon the culture of this tree then followed.

The next subject was "Cherries," and John Rock, of San Jose, was on hand with a fine assortment of all the leading market varieties, which he used as texts to his talk on the subject, and then distributed them among the members of the society. If Mr. Rock does that sort of thing very often he will be the most popular man in the society before long. Among the cherries shown

and sampled were the Black Tartarian, Napoleon Bigarreau, Governor Wood, Great Bigarreau, Black Eagle, Cleveland Bigarreau, Yellow Spanish, and red Hortense varieties.

Leonard Coates, in a letter from Yountville, stated as follows:

"I believe *too much cultivation* to be, in most cases, the cause of the gumming, and rapid and premature decay of our cherry trees. This I regard as the most frequent source of evil, but, also, the very general use of the Mahaleb stock by nurserymen a number of years ago, and a 'miscellaneous' stock, so-called from its being raised from the seed of any kind of cherries, a small portion of which being good, but the greater part inferior. The true Mazzard has thus far shown to be the best stock. Cherry trees in Napa, where grown in a wet soil retentive of moisture (and this applies, it would seem, to almost all parts of the State), are rapidly dying out, but, upon closer observation, I find that trees, even in young orchards, in a well-drained, sandy, though deep and rich soil, are becoming diseased in the same way. This latter soil is easily cultivated and pulverized. I know of several cherry trees, of great size and perfectly healthy, growing in yards in Napa Valley, which are said to have never been cultivated. I have seen, also, some that were set out four years ago on the border of a croquet ground—never being plowed—and which have not the least vestige of gum upon them, making about a foot of new wood in a season, instead of the unnatural increase of three and even five feet often to be met with in thoroughly tilled orchards."

The Floricultural subject was then taken up, and the editor of the HORTICULTURIST read a paper on Fuchsias, giving notes on their treatment. Lack of space, however, forbids the use of this article in our report. The subject of the cultivation of flowers for their perfume will be taken up at the next meeting.

Mr. Jessup, of Haywards, next spoke of the currant borers, which are causing much loss in that section. The chief evil was a moth, which in turning into pupa state seemed to poison the entire bush immediately, though one would expect it to effect only the particular limb to which it was attached. He had had bushes laden with ripe currants ready for picking, and in three days the apparently healthy leaves would be wilted, the currants dried up, and the bush dying. The borer penetrated to the pith, and ran up a distance varying from an inch and a quarter to three inches.

Peach and Plum culture are the main subjects next month.

BRIEF FRUIT NOTES.

It is not too late to thin winter apples.

The Winter Nelis pear crop is short this year.

The fruit crop of Shasta is said to be a large one.

Fine oranges have been grown on Sonoma Mountain.

Dr. Jarvis, of Riverside, has an orchard of 7,000 apricots.

Raspberries are said to succeed best in the shade of trees.

Walnut trees in Downey and at Carpenteria are loaded down.

A grape-grower of Sonoma is experimenting with 260 varieties of grapes.

This has been a bad year for peach-curl in almost every part of California.

The fruit crop is good in the Pajaro, and through Santa Cruz and San Mateo.

An apricot orchard is one of the safest investments, as this year's prices show.

Decaisne is a new plum, much like Coe's Golden, but ripening a month earlier.

A corporation is being formed at Los Angeles to plant a 1,200 acre vineyard near San Gorgonio.

A Santa Ana fruit dealer finds that lemons may be buried in the soil for four months, and keep excellently well.

The following are fine late peaches not yet in general cultivation: Wheatland, Wager, Conkling, and Bogg's Leviathan.

One pint of carbolic acid added to one hundred quarts of water makes a wash which kills insects of every description.

Men who have studied the wine industries of the State predict that within twenty-five years San Joaquin will rank among the first of grape producing countries.

The rules for those who deal in small fruits are: First, good cultivation; second, careful picking; third, neat packing; fourth, rapid transit to market, and quick sales.

The white Chile Strawberry has been more than usually abundant in the markets of San Francisco. If this berry was only a good bearer, growers would probably prefer it to almost any other.

The new apples of last year are few in number. Kirkland is a large yellow apple, much like the Yellow Bellflower. Highland Beauty was originated near the Hudson River. It is of good size and rich color, and is a late keeper.

New pears are not apt to excite the interest of Californians, for only a few have proved profitable here. W. C. Barry has brought out the Hoosic, a Massachusetts seedling. Fruit large, quality good, season late.

Mr. Henry Chenworth, of St. Matthews, Ky., has been experimenting with linseed oil for pear blight. He painted the trunk and large limbs of his trees with it, and has used it for ten years with complete success.

It is estimated that the value of fruit grown in the United States annually equals $75,000,000. The quantity sent abroad from Boston last year was large, one dealer alone shipping 30,000 barrels to England, besides large quantities to Norway and Sweden.

The following list of new early peaches is worth notice: Beckwith's Early, Brice's Early June, Vandeman's Early, Nugent's Early, Tonn's Early, Emporia, Ashley's Early, Callie Scaff, Waterloo, and Governor Garland. All these are claimed to be ahead of Amsden. Schumaker is the earliest yellow. Alpha is one of the best.

BRIEF NOTES—HORTICULTURAL AND OTHERWISE.

The Sierra foot-hills will have a good crop this year.

A five year old date palm is in blossom at Sonoma.

Mons. Souchet, a noted grower of new Gladioli, died recently in France.

Southern California has had coffee and date trees distributed from Washington.

Brandy, distilled from the juice of limes and lemons, has been made in Tucson, Arizona.

There are three hundred and forty species of the squash family. Some are poisonous, and others are edible.

The Wagner apple is highly complimented by the Santa Rosa *Republican* as one of the most reliable of kinds.

Fremontia Californica at Kew Gardens, has been killed by the frost, but it escaped in other parts of England.

Wheat cut early is less liable to waste and shrivel. It should be cut while the grain is yet yielding, but not milky.

Rubus deliciosus, or Snowy Bramble, a native of the Northern Pacific Coast region, is becoming a favorite lawn plant in some English gardens.

Loasa hispida, a fine climber, with yellow and white-centered flowers, is a handsome thing for a trellis, but the stem is thickly set with stinging hairs.

Only the best and most efficient of harvesting machinery is worth using in cutting and threshing grain. Poor machinery often wastes enough to pay for the difference in cost twice over.

The Riverside people have received orange trees from the Agricultural Department which were covered with the dangerous European narrow-scale, a pest before unknown here. The insects were of course destroyed.

North winds in early June swept down the Sacramento and San Joaquin valleys, drying out and blighting much grain. Though this has lessened the prospects, yet California's wheat crop will still be larger than usual.

Puget Sound country is attracting many immigrants, who find that its resources are numerous. Just now the culture of cranberries for the San Francisco markets appears to be quite an industry, and there is room for more in the business.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

APRIL IN COLUSA.

The following is a portion of a letter received in April. It is so cheerful a picture of an outdoor and healthy life in a beautiful land, that we have not been able to keep from printing it. Now, in the warm harvest month of July, let us think of this April garden-making picture:

EDITOR HORTICULTURIST — Dear Sir: We are making the garden over again, but some things are immovable. Pansies, Daisies, and Royal Lilies, have been put next the porch in narrow beds. On the west side of the path is the white bed of flowers. We have ordered from Innisfallen the Johnsonii Amaryllis. On the east side is my geranium bed—some twenty old plants and fifteen new ones, besides those for the greenhouse. Bishop Wood, New Life, Wm. Cullen Bryant, and Asa Gray, are among them. Further still to the east is an ornamental shrub bed. Prominent in that are Altheas and Daphne Cenereum. The huge grape vine you remember of being there, is to be trained over the summer house you wanted us to make sure of. Coming back to the centre is my diamond bed of roses. To our stock of eighty-three we have added thirty-four this spring. They are the best varieties we could read of, including Countess de Panissee, Letty Coles, Niphetos, Mad. Wood, Welch, and American Banner.

Our bed of Gladioli next to the white bed promises well, and the new one is a pure white. Farther west of that is the tropical bed. That hope of the old

garden, the palm, is not winter-killed, but it looks pretty tired. We have a new Crab Cactus and a Cereus grandiflora. What to do with the annuals is now the serious question, for the circular verbena mound, oval bed of blue grass and lily pond, with these others, leave small space for Petunias, Phlox, Plumbago, Salvias, Pinks, Scabiosa, etc. In my greenhouse the favorites now are Fuchsias, Camellia Japonicas, and Azalea Indicas, though many others are looking well.

I wish I knew what to use instead of peat to propagate ferns in. What reliable pronouncing vocabulary of botanical names could one purchase? Won't you come to see us? I am sure the flowers would know it, and we should be glad. MR. AND MRS. C. E. S.

Williams, Colusa Co., Cal.

HOT-HOUSE PLANTS IN SANTA BARBARA GARDENS.

EDITOR HORTICULTURIST — Dear Sir: The following is a partial list of plants in the garden of Dr. L. N. Dimmick, Santa Barbara, Cal., that have grown in the open air without any protection during the past winter of 1879–80: In bloom all winter — Bignonia venusta, Strelitzia regina, Jasminum Azoricum, Libonia floribunda, Russellia juncea, Cuphea platycentra, Lophospermum, Heliotrope, Cereus tubiflorus; Cereus grandiflorus bloomed in January; Bouvardias, in bloom all winter; Quisqualis villosa, bloomed till last of February; Crinum amabile and three other kinds; Hoya carnosa variegata, Tacsonia Van Vloxemi, Philodendron pertusum (Monsteria deliciosa), Bourgainvillea glabra and spectabilis, Tecoma jasminoides (bloomed nearly all winter), Rhyncospermum jasminoides, Jasminum grandiflorum, Cycas revoluta, Seaforthia elegans, Jubea spectabilis, Latania Bourbonica, Chamerops excelsa, Livistonia Australis, Doryanthes Palmeri, Stephanotis floribunda (injured somewhat but living).

Yours truly, L. N. D.

Santa Barbara, June, 1880.

STOVE-PLANTS UNDER GARDEN TREATMENT.

EDITOR HORTICULTURIST—Dear Sir: In Santa Barbara the Australian Brachychitons, ranked as stove plants by English florists, seem to thrive in the most satisfactory manner with open air treatment, making sturdy and rapid growth. Brachychiton acerfolia forms a pyramidical trunk with great strength of base, and a dense crown of maple-like foliage. B. Australis has a more open habit of branching with fewer leaves, but is equally elegant. These are the "Flame Trees" of Australia, so called from their beautiful trusses of crimson flowers. Sterculia diversifolia and S. verpestris, allied to the Brachychitons, are taking kindly to our region, and seem desirable acquisitions. The latter has a leaf deeply cut, with white midrib, giving it an unique appearance. Mackaya bella, a beautiful African shrub, has withstood the low temperature of the last winter, and I think it will become a favorite.

The following, a class of plants usually requiring hot-house treatment, have not suffered although without protection: Cycas revoluta, Pitcairnia angustifolia, Sanseveria Guinsensis, Philodendron pertusum, Pandanus utilis or Screw Pine, and Beaucarnea glauca. Of the climbers Stephanotis floribunda and Clerodendron Balfouri have been injured, but I am confident both will thrive during our ordinary winters. The new Australian Tecoma velutina and the Poinsettias have succumbed after living through two former winters.

I have confined this list strictly to such as are usually termed stove plants.

Yours truly,

H. C. Ford.

Santa Barbara, June, 1880.

BRIEFS OF CORRESPONDENCE.

W. F. Parish, San Bernardino, gives us vivid descriptions of the desert lands, of the Cacti and the Yuccas.

Dr. S. M. Curl, New Zealand, would be much pleased to receive seeds of California medicinal plants for testing them.

Miss M. C. Reynolds, of St. Augustine, writes that she is making collections of the rare ferns of that region for exchange and sale.

R. Kendall, of Santa Ana, is raising the cayenne pepper tree. It is a beautiful evergreen tree or shrub, and is a perpetual bearer, having blossoms and ripening berries at the same time.

Jos. Sexton, of Goleta, Santa Barbara County, has a two-year old persimmon tree which this season bore several fine persimmons, one of which measured 10½ inches in circumference.

Zante currants fully equal to the imported have been produced at Santa Ana. As many hundred thousand barrels are imported into this country every year it would be well to extend the culture of the grapes which produce the dried currants of commerce.

Our lady correspondent in New Zealand writes us that the Horticulturist is a welcome visitor to that bright and strange land. No less pleasant are her descriptive letters, which bring forest and mountain, lake and Maori village, under our very gaze.

A curious case of metamorphosis comes to us from Grass Valley. A friend sends us a blossom picked from an apple tree. It is twice as large as the ordinary apple flowers, and is quite double. In other words, the stamens, many of them, have been transformed into petals.

In some parts of California the nectarine has been almost worthless because the fruit was so eaten by the bug commonly called squash bug. Mr. T. J. Bundage, of Tulare County, writes that by planting this tree on alkali soil all difficulty with this bug is avoided, and the nectarine is a profitable fruit.

A package of the Queensland Nut (Macadamia) has just been received from Prof. Hill, Director of the Brisbane Botanical Gardens. We learn from his accompanying letter that the forests of this valuable tree are rapidly being destroyed, and efforts are to be made to plant it extensively. It is really one of the best flavored nuts of which we have any knowledge, and deserves the attention of California orchardists.

NOTES FROM OUR EXCHANGES.

Double Flowers.—In order to obtain double flowers, it has been thought advisable to make use of the pollen from double flowers, where it is possible to obtain it, and to apply it to the stigma of single flowers from which it is desired to procure double-flowered seedlings. M. Lemoine, desirous of experimenting with lilacs, found that the only double-flowered lilac then known had no stamens, and consequently no pollen. He therefore decided to reverse the process, and to fertilize the stigmas of certain double-flowered lilacs with the pollen from some of the best single varieties. The experiment was so far a success, that out of forty seedlings

thirty at least yielded semi-double or double flowers, one of them being very remarkable for its beauty.—*Florist.*

A Good Greenhouse Plant.—Dichorizandra thyrsiflora is a very beautiful cool stove plant, with flowers of a rich dark blue tint. It is one of Baron Von Mueller's introductions, and may still be seen in the Botanic Garden, elsewhere not so much cultivated as it deserves.—*Journal of Horticulture.*

Hanging Baskets for Spring.—As hanging basket plants, I have just now nothing prettier than Asparagus decumbens with its drooping clouds of feathery spray, and the golden-flowered Himalayan Strawberry (Fragaria indica). The latter is a robust growing trailer, quite at home in a sunny window or in a cool house, and its graceful stems, dark green leaves, golden flowers, and crimson fruits, render it most attractive and to many an uncommon object. Unlike many other basket plants, this possesses the advantage of remaining in full beauty during the winter and spring months.—*The Garden.*

Early Spring-flowering Gesneraceous Plants.—Soft-wooded stove-plants in flower during winter and early spring are always scarce, but by growing a number of the various kinds of Tydæa an attractive show may be made even in winter, as they are almost continuously in flower. In one of the stoves at Kew there is a good selection of varieties, chiefly of Continental origin. Among the best kinds are Madame Heine, with purple flowers quaintly barred and spotted with yellow, Robert le Diable and Vesuvius, good dark red flowered varieties. They are easily grown, and produce flowers in profusion.—*The Garden.*

SELECTED ARTICLES.

The Charm of Flowers.—It is a noted fact that nothing can add to the grace and comfort of a house so much as natural flowers. Furnishers and decorators, whether they belong to the modern, classic, mediæval, or French schools, never consider the comforts of a well-appointed dwelling in any sense complete without some judicious use of flowers in their living state. The charm of a cottage is often to be found in its window flowers; while the not very hospitable arrangements of an almshouse home are rendered enviable by the charming bright flower beds which are nearly always found in connection with such dwellings. Simple and trite such remarks may be, but if there be one question of domestic economy occupying the attention of cultivated people, it is to make one's home in some sense artistic with the beauties of nature.—*Otago Witness.*

Thrift as an Edging Plant.—The past winter, you are aware, has been one of unusual severity for this coast, and much of the former conceit of Californians is on the wane in regard to our mild and beautiful weather. At this point the thermometer marked 20° for several days during December, and many a well-loved garden favorite has succumbed to the chilly wintry blasts that was usually considered proof against cold. And as spring is now fairly upon us, we look around the garden to see what can be done to repair the wreck so as to produce the best results.

The first and most important point in our climate, where we try to keep up a respectable appearance in the garden the year round, is a good permanent border, one that will look well winter and summer; among the score of plants

used for this purpose, none, in my estimation, answers so well as Thrift, Armeia vulgaris, and I am surprised, in looking over the articles of your many contributors, that none have a word of praise for this beautiful little plant. It is very easily propagated from cuttings; every piece will make a plant if taken in the fall or early spring, and is perfectly hardy. Its modest little clusters of pink flowers standing well above the foliage are useful for making up floral work; the plants always look well without the aid of shears to keep them in trim. In fact, it combines all the qualities of a perfect edging plant.—*J. E. P., Rio Vista, Cal., in Vick's Monthly.*

The Japan Quince as a Fruit Tree.—It is comparatively recent that I have become aware of the fact that the Japan Quince (Cydonia Japonica) produced fruit of any value, or in any considerable quantity. I purchased a place in 1864 that had growing three or four plants of this quince, of both the common scarlet and also the pink flowered varieties. These plants were 9 or 10 feet high, and about six feet across the clump of shoots. Although these plants bloomed most profusely, they only occasionally perfected any fruit, and what little there was was very small, of a tough, woody texture, with a few seeds, with almost no flesh at all resembling a useful fruit. I had cultivated this plant as a flowering shrub for perhaps twenty years previously, without ever expecting to see valuable fruit. Recently I have met with displays of the fruit which surprised me, on account of its size and abundance, and also on account of its superior quality. I have seen specimens two by three inches in diameter, with a fine fleshy texture, abounding in a rich, aromatic juice, as tart and very much like a lemon, readily producing a jelly of the finest quality and most delightful flavor. The fruit when baked or stewed becomes very fine, and serves admirably to flavor stewed fruit, apple butter, etc.

For flavoring other fruits in cooking, this variety of Japan Quince is well worthy of culture, and as a flavoring shrub, this is equal to any other variety that I have seen.

The largest specimens yield from 50 to 100 seeds each, and the seedlings are recommended by some as a stock for dwarf pears. I doubt, however, whether they will prove adapted to this use. I have a number of plants producing the finest fruit, and intend, by selecting the finest specimens, to make further improvements in the fruit.

Mr. Maule, a nurseryman in England, introduced a few years ago a variety of Japan quince that he sold under the name of "Pyrus Maulei." I can not learn, from descriptions I have seen of this fruit, that it is superior to some specimens grown here. I hope, however, to fruit this variety also, and compare it with those I have already. I invite the attention of others to this plant as one capable of great improvement, and one from which we may expect valuable results.—*E. Y. Teas, in Botanical Index.*

Botanical Collections.—It is a well known fact that all the large new plant merchants live in Europe and employ a large number of collectors annually. Nearly every large house sends out from one to four scientific and practical collectors, and in addition employ a number of persons who permanently reside abroad to collect many of the local plants, bulbs, or seeds, from their respective residences. In the January number we have given a very complete

list, and will here add a few more. J. N. Verschaffelt's letter from Ghent, Belgium, being delayed, and not reaching us until too late for the January number, we will give its new points here. He employs one collector in North Africa, three in Australia, two in Brazil, two at the Cape of Good Hope, two in Mexico, one in Natal, one in New Zealand, and two in South America.

J. Linden, Ghent, Belgium, employs one in Africa, one in Australia, two in Brazil, one at the Cape of Good Hope, two in Central America, and one in Mexico.

Otto Frœbel & Co., of Zurich, had only home (European) collectors in 1879. They were, namely, one in the Pyrenees, one in the Italian Alps, and one in the Eastern Alps.

Frederick von der Heiden, of Hilden, Germany, employs one collector in Mexico searching for new or rare Cactus, Echeverias, and other succulents. He has a very extensive correspondence with lovers of this class of plants from all parts of the world, and is desirous to correspond with others interested in the subject.

Henry Golding has moved further inland at the Cape of Good Hope, and still finds much interest in that strange country.

Mr. C. F. Creswell writes from Melbourne (Australia): "I have one man collecting through the Colonies of Victoria, New South Wales, and Queensland, who has collected in all 857 distinct varieties of Australian seeds and plants, now on exhibition at Sydney, N. S. W. The exhibit includes one variety unknown to botanical science, a specimen of which is now in the hands of Baron F. von Mueller, Government Botanist, of Victoria, for naming and classifying. The Baron will probably name this plant in honor of its discoverer, Mr. A. de la Camara, a gentleman of great botanical ability.—*Botanical Index.*

LIGHT IN ITS RELATION TO THE VEGETABLE KINGDOM.

By W G. Klee, Berkeley, Cal.

Before I proceed to treat upon the direct subject I shall make a few general remarks on the nature of plants and their relation to the atmosphere, and to the earth as a whole.

The office of plants in nature's great household is one of the most importance, indeed much greater than is generally supposed. As their first and most important function we have that of decomposing inorganic matter, and changing it to organic, thereby giving the animals their means of subsistence, while at the same time purifying the air and rendering it better fit for animals to breathe. This chemically changes the decomposition of carbonic acid in its two constituents, by retaining the carbon, and giving the oxygen back to the air. When the plant does this it is termed assimilation, and only takes place under the influence of light, and exclusively in the green parts of the plant. If we look back to the early periods of the earth we are led to believe that the atmosphere was highly charged with carbonic acid, and the nature of the plants found in the coal strata seem to point to the same fact. The remains of all these plants found show plainly by their enormous dimensions a comparatively loose cellular structure, and that they have developed under conditions quite different from the present. As their now existing relations are plants which belong to the Cryptogams and Cycads and delight in a warm, close atmosphere, and principally grow in dim light, we may draw the conclusion that they prepared the

atmosphere for the higher animals which appeared later.

The second and too often forgotten function of the plants is that of influencing the climate by making it more temperate and humid. This is a fact, though it has been denied by apparently good authorities, and the most striking proof here is that of northern Illinois and Indiana, where the forests have been destroyed to supply Chicago and other large cities. The peach that once ripened well there is now an utter failure, except on walls or in the cities. The reason seems clear; the night frosts occur later in the spring than before, and kill the flowers of the early-blooming peach, and this change, a direct result of the destruction of the forests, has taken place within forty years. That the devastation of the forests renders the climate more arid, we have many proofs from different parts of the world, such as Germany, certain portions of Egypt, Denmark, and, perhaps one of the clearest, the Sandwich Islands.

If we cast a glance at the vegetable world we find that we, perhaps rather arbitrarily, may divide it into two great classes: viz. (1) the chlorophyl-containing plants, and (2) the non-chlorophylic plants. The first class may with reason be called the children of light, because they can not make any direct growth without being exposed to light, while the members of the second class, on the contrary, grow better in shade; we have therefore a right to call them the children of darkness, however important in other respects they may be. Now let us turn to the green chlorophyl-containing plants, the true children of light. Among them we find the most varying forms, and also the most different powers of adaptation to the various conditions of light.

The chemical action of the different colored rays of the solar spectrum on the different functions of plants is highly interesting, but it is far from being clearly understood, and we shall therefore draw attention to the most important points. Thus the colored rays of medium and weak refrangibility, red, orange, yellow, and green, seem almost exclusively to influence the formation of coloring matter in chlorophyl, the decomposition of carbonic acid, and the formation of fat, starch, and sugar. On the other hand we have the rays of strong refrangibility, blue, violet, and indigo, which give a quite different effect, as it appears, governing the growth, the movement of protoplasma, and the change of position in leaves and their organs of movement.

If we plant a seed in sufficiently warm and moist soil, germination takes place, and the oxygen from water and air combines with the carbon of the seed, fermentation follows, the starch is changed to detrine and detrine to sugar, which is soluble in water and can be conveyed to different parts of the young plant, which soon commences to lengthen its root downward, and to expand its cotylydons above the ground. Light will now be necessary for the young plant, but the quantity needed is very different for the different species of plants. The amount of nourishment stored up either in the cotylydons or in the albumen is the determining cause; if that is used up the plant has nothing to live on, and is unable to support itself without light. The necessity of giving young plants with little albumen in the seed a full exposure to the light is obvious, but even seedlings provided with plenty of albumen ought never to be left long in darkness after the cotylydons have expanded above the ground. The difficulty in raising plants during

the winter in cold countries, with short dark days, is therefore clear, and even to raise common vegetables at this time requires great attention, the degree of which persons accustomed to sow and plant all the year round in this garden land of California have no conception. When a young plant commences to assimilate, its battle for life has begun; it then has to shift for itself, obtain light, or perish. Viewed in this way the power of light on plants is truly astonishing. They seem to be moulded and governed by sunrays, so that even their total extinction, and their distribution, is influenced thereby, and in many cases this is due mainly to their different powers of adaptation to light. If we take a look at a poplar tree, we find that, compared with other trees, its leaves are thinly distributed, and that the branches also are at a great distance from each other, and in fact the whole crown of the tree very thin. Moreover, if this tree stands near an oak, maple, or ash, we will find that it has bent itself away from the shade of the tree, seeking to get all its leaves exposed to the light. But we can see comparative little change from the natural form of the oak or maple, which seem to grow just as well as if no trees were shading them. Now we might be led to believe that the oak might be able to develop its natural shape, if for instance it were near a wall, where it had plenty of light from above and from one side. This, however, is not the case. It will grow more towards the side that has full exposure to the light, and the branches that turn towards the wall will grow a good deal more slowly long before they get into actual contact with the wall. This one-sidedness of plants is better shown by fast-growing herbs placed in a window of an ordinary room.

It has often been said that only in nature do we see harmony and peace, and certainly it should seem so if we on a fine summer day take a stroll in a forest. But if we look closer we shall probably see that on the very spot where we stand there is a battle for existence going on. Perhaps we see a coarse herb shoot up among the innocent flowers, and it has bereft them of light and of means of subsistence. It is not so much because it takes the nourishment away from the soil that they fade and wither. Is this not a struggle, a fierce struggle? It certainly is dumb, but not less fatal. It is the great struggle for existence that we find going through all nature up to our own level. What we see here on a small scale we can also see with the trees above us. If they consist of the same species we may conclude that the battle is less severe, for then it is only between the young and old members of the community, and a reign of comparative peace is won. With trees very similar in their power to endure, or what is the same, with almost equal density of the top, this struggle is sure to be long, and may continue to last for centuries, the one perhaps being favored by local conditions; but placed on equal footing and the more dense growing tree will be the final victor.

We are sorry that our ignorance of American forests does not allow us to point out positive evidence on this head, that is, where one race or species of trees have completely subjugated another. We have been informed that the madrona is greatly in the decline, and it certainly is inferior to the live oak in its power to endure shade. We shall therefore be excused if we go elsewhere for clear evidence on this fact, even if we have to go to little Denmark for information. Nowhere on the face of the earth does the beech (fagus syl-

vatica) develop such a beautiful form or show such a vigor of growth in natural condition, and nowhere do we find such pure beech forests as in Denmark. This, however, has not always been the case, for if we take the trouble to examine the peat swamps, we find here, in the upper layer, trunks of oak and birch, and if we can have a chance to see the lower strata we shall find plenty of pine trunks and birch, but no beech in any of the layers and comparatively few oaks in the lower strata. This teaches us that the pines, now completely extinct, once were the most common trees in the forest. They were followed by the oak, a more dense grower, which now in its turn has been conquered by the beech, driven from the best soil, and forming only in comparatively few places forests of any extent. When it does occur it is in soil on which the beech does not thrive well. The birch has in the same way managed to escape total extinction by taking refuge in the swampy valleys where the beech can not follow it. Here, however, the birch encounters another enemy, the ash, which is a more dense grower, and if not assisted by the interference of man, it would probably be wholly extinct to-day. In the still mixed forests we can plainly see the battle going on between the oak and beech; we can see how the beech develops its natural shape though surrounded by oaks; how it shoots its thickly-covered branches right into the oak, and every where it spreads, the oak loses its leaves, and finally its branches. As remarked before, the struggle is of long duration between two trees both of a very dense-growing character, but its result is sure, the beeches becoming the final victors. The reason why this state of things is always brought about is due entirely to local and social influences. The forests were until the beginning of this century used as grazing places, and the seeds and young plants were eaten by the animals which were kept there. The oak seemed to be more hardy in resisting this evil.

Similar facts of the powerful influence of light in the distribution of plants can be found all over the world, but perhaps it is nowhere clearer than in the case with the Danish forests.

FARM NOTES FOR JULY.

Avoid over-work.—It is usual for busy farmers in this month, worried beyond endurance by the press of labors which appear inevitable, to do too much for their own health and future usefulness. Over-work is a sin against one's own nature. We can pay too large a price for money, nor is health, once fairly lost, to be won easily back.

Californians work, as they do everything else, with a nervous energy, very admirable at times, but often positively frightful to contemplate. At any sacrifice it is best to keep young as long as possible, to grow old with grace, to keep one's joints limber, and to retain one's interest in the innocent amusements and social enjoyments of life. Much of that over-work and worry which is so reprehensible can be guarded against and prevented by wise planning beforehand. Forethought saves many a useless step.

Save the Grain.—The harvest is what a man has toiled and waited for all these past months. He chose good seed, prepared the soil well, watched and tended the crop, pulled out the noxious weeds, and is now near the fruition of his hopes. The aim must be to save every available grain. We are out of patience with that hap-hazard style of farming which persists in leaving uncut

strips next to the fence, and waste rods in the corners of the field. Shabby examples of such slipshod farming may be seen in any one of our rich valleys during the harvest months. If it is a custom handed down from the "days of '49" it is one of those sorry customs which are better in the breach than in the observance. Of course the common reply is that the cattle, turned in upon the stubble after harvest, will gather up the waste. When it is more profitable to feed wheat than to sack and sell it, then that is a sufficient reason, but not before. Too much good grain is wasted in the operations of harvesting, and there is room for a new departure in this matter.

The Crucial Home-test.—This is the season at which the bonds of home life are most strongly tested. It is hot weather on the farm, and the over-work we spoke of presses hardly upon the housewife, as well as upon the husband. There is probably an extra force of men to cook for, and perhaps fewer facilities than usual. Whatever else is left undone, the head of the family must see that wood and water are amply provided, that sufficient assistance is given, and that, in short, a full and proper appreciation of the daily exigencies of the indoor department is shown. The differences between men crops out distinctively in such matters. Great, hearty men, whose outdoor work hardly tires them, have been known to be positively brutal in their scorn of these things. Really, it is not possible to speak or think of this with patience.

A Few Cool Suggestions. — These warm weeks suggest, by a most natural antithesis, certain cool relationships and arrangements, which we offer, with due trembling, to the general public of country folk. Of matters confessedly desirable, but not all at once attainable, we note the following: Carp-pond, water-lily tank, flowing water in the dairy-room, cold drinking water, and ice *ad libitum*. Which daring list the householder had best examine, wrest from circumstance, and shape from yielding fortune. Not, perhaps, all at once, but slowly, as opportunity offers. The hill-side farms give the best chance for cool dairies, fish ponds, and ice houses, but let no man, even on our wide plains, despair of these things.

Editorial Department.

PLANT YOUR STAKE.

Thirty years ago a young man, without capital other than his own energy, might have come to California and taken up government land in what are now the garden spots of the State. His quarter section there pre-empted would now be worth fifty or one hundred dollars an acre. He would have neighbors and friends about him, schools and churches within reach, railroads past his doors, and the whole machinery of modern existence daily made a part of his life.

The young man of to-day looks at this growth and wonders vaguely why he could not have come upon the stage of action a few years sooner, while there were yet untilled valleys, unfenced hills, and undiscovered mines. But does any sane person for a moment imagine that from now henceforward there is to be, in this wide domain, only silence, stagnation, wreck? Is not the progress of the next thirty years to compare favorably with the past? As a whole, is it not more than likely that heavy will be the regrets of the young man who to-day, in this year of grace 1880, shakes off the dust of California, and seeks new

fields for the next thirty years? What will Oakland be then, and Southern Alameda, and the pleasant slopes of Santa Cruz? What price, think you, will then be offered for the grape lands of Napa and Sonoma, the olive orchards of San Diego and Santa Barbara, the orange groves of Los Angeles and Riverside, the peach and cherry orchards of Vacaville?

In this matter of winning a competence, and being one's own master, it appears evident that there is room out of doors for energy and hope; room in each county of the State for active young men; places where a few dollars will enable one to get a foothold, to cling, and hew out his path to success. Day after day, and dime after dime, we have seen men save enough to make a beginning for themselves. They set their stake, and they worked, inch by inch nearer, until the hour of triumph came as it always does for those who toil wisely.

HOW THEY ARE WINNING A HOME.

A gentleman in this city of San Francisco told us a story the other day which is as true as anything can be, and is worth the attention of young people who would like to obtain a solid foothold in this busy world.

They were newly married people, and the husband worked in a large manufacturing establishment. He had saved up a few hundred dollars by the time that they were married. His work was hard, and confining, nor was the pay excessively high, but they had hopes and plans (which are the salvation of people) and so they saved every cent possible. At last they had money enough to make a beginning elsewhere. The husband went to Fresno County, to one of the colonies on irrigated lands there, and bought twenty acres. But this used up nearly all the money they had, so the wife took a place as servant in a family, the husband bought a team, went to the farm and began work, writing, we may be sure, long and frequent letters to the plucky woman who was so bravely helping to win their home. This occurred last year. During the winter our hero planted his twenty acres to grapes, and took the best care of them, besides making many improvements about the place. His wife sent him most of her earnings, and he worked awhile for his wealthier neighbors. Every cent they could spare went on the farm in some permanent way. It is said that his chief diet was and is oat meal, bacon, beans, and vegetables of his own raising. Furthermore, as we are told, this outdoor life has much improved our hero's health, and he is as rugged as a pine-knot.

Risk there is none in predicting that as soon as those grape vines begin to bear, a cottage will be built, the family will be re-united, and in all Fresno County there will not be a happier home than this, earned by such thrift and economy. If it were not waste breath we should ask some one of the dear people's friends to read this story on the sand-lots, where blear-eyed men curse our land, and the toilers thereof, refusing to know that there is work for every one's right arm and somewhere a place for all honest work. Land, twenty acres of which will support a family, is still to be purchased for twenty dollars per acre. Men who would rather infest bar-rooms, and live upon the public, than to make homes for themselves, had best go out and search for another planet where perchance the fates move backward, and industry fails to prosper. But those who have caught the world's secret will sow, hoping to reap, will plan as best they may, and will

thereafter wait with long patience and with endless trust.

A SPECIALIST'S WORK.

On the 18th of last March, in the State of New Jersey, a quaint and persevering collector of plants, Coe F. Austin, died, leaving his family in rather straitened circumstances. The Torrey Botanical Club *Bulletin* gives a *resume* of his work. We are told that chemistry and botany were his favorite studies, that for some years he was curator of Columbia College, and that his ardent love of the mosses and Hepaticæ at last led him to abandon all other work, and so, by dint of eager toil, he became known as one of the leading bryologists. (That means one who studies the mosses, and moss nature.) He was one of the best of collectors, pursuing such work with indefatigable ardor. His first publication, the *Musci Appalachiani*, is a collection of 450 specimens. A supplement issued in 1878 raised this number to 550. Among these over 400 are species and the rest are valuable varieties. In 1869 this laborious enthusiast contributed a paper on 47 species of Hepaticæ, and soon after published his *Hepaticæ Boreali Americanæ*, comprising 150 specimens. The Torrey Club Report says that "a large number of his species of Mosses stand as wonders of his clear discrimination, and he leaves a name dear to American botanists, and well known to European bryologists." It may also be said that he was the only authority in Hepaticology in the United States. He left sets of his Musci and Hepaticæ all labeled and indexed. These are to be sold for the benefit of the family.

Thus we have given the barest outline of the life of one of our soldiers of science. Compared with the work of the Vermont botanist of whom we spoke last month there appears to be less of practical adaptation to the hard requirements of life, and more of that ideal enthusiasm and rare self-abnegation which makes the true specialist so essential a factor in modern progress. If the end and aim of mortal existence is to live clad in purple, this man of whom we write were the wildest of fanatics. For the sake of studying a few simple and often unnoticed forms of plant life, he quietly ignored the rude wrestle for lands, mines and stocks. It is hardly possible to say that he "made his choice." As we understand the way such things come to pass, he felt, deep hid in his being, the call to do this work, and with full comprehension of its force, went forth without worry, and even with gladness.

There are moods in which even the best of us who have chosen to do the world's daily work, and take her daily reward, living among men, and studying many things somewhat, but few things thoroughly; there are moods, I say, in which we look with admiration and half envy upon those who are masters of one thing, be its realm never so narrow. We have chosen, and they also have chosen. For us the wide sunlight and swift rewards while yet we live; for them the going apart, the consecration at the altar, the silence of a new Gethsemane. It is an endless doubt; shall one, with Holmes, study the "Order of Things," or with the "Scarabeus" devote a lifetime to the coleoptera? The answer I fancy is in ourselves, and in our environments. Do that which comes nearest, and which we can best do, leaving the rest to the wiser folk of that calm and wonderful future for which we, even now, are laying the white foundation stones.

NAPA CITY orange trees are in blossom.

SCHOOLS AND THE LEAVING OF THEM.

The months of May and June are pre-eminently the days which are dedicated to Tennyson's "Sweet Girl Graduate," and all that sort of thing. From high schools, seminaries, private academies, training schools, and universities of various degrees, the young men and women come forth fresh from their books, anxious to taste of the busy world's pleasures, to share its battles, and to win some of its victories. Some of them turn to the cities; others find that their work, for awhile at least, lies in country places, lonesome perhaps, and in many ways uncongenial. The yearly gift of the schools to the people in these young, earnest persons, freshly grappling with life's problems, is greater than may well be reckoned. In sober reality, not one among ten thousand fully comprehends its significance. Be it remembered also, that there is hardly a public school in the State out of whose doors, as the summer term closes, one or more pupils do not pass, never to return again, going forth, perhaps, with weak armor and weapons half tempered, but heedless and eager, as is the wont of such.

Considering how much it costs to make men and women ready for life, even in the sense of preliminary school-training, and also the almost endless difficulties and huge rock-like dangers which hem in and thickly strew the course, one might legitimately suppose that this graduation business would come to mean even more than it has, would be a more beautiful ceremony, and would more fully waken the sympathies, affections and reverence of the public at large. As it is now, the friends and relatives of those who graduate are the ones who celebrate the event. In the ideal city (as yet far enough distant) the glad people, young and old, gray-haired grandfathers, and merry children, will go out with songs, garlands, and much rejoicing, to welcome the youths and maidens from the wise preparation of school and college; to be rapturous over their strength and grace, and anxious to make place for them, to prove their capabilities, to develop their best and purest. The true national holiday of a free people should be of some such sort, and the honors of successful scholarship should outrank in positive interest the boat race, walking match, and public picnic. Once there was a land where the son of the people who honored his city by winning prizes of hand or brain, in the national gatherings, was counted worthy to be carried home, by glad arms, rejoicingly, and through a new entrance cut in the city walls. Let us, emulating such examples, see to it that in this young State we strive to give reverence of soul and hard labor to matters essential and ultimate, such as this of schools, and of the leaving of them to mingle in life's many struggles.

THE GARDEN IN JULY.

The lowland garden is a perplexing entanglement of growths and blooms by this time. In a certain garden we wot of the beds of mountain lilies, L. Humboldtii, L. Washingtonium, L. Parryii, and others, are now in their prime. The Japan lilies are only growing and budding, but a week more will bring their hidden cups into light. The anemones are fairly gone, the pansies are not quite as large as they were of old, but they are more numerous. Over the fence, and climbing into the Pride of China tree, there are clematis vines of several species and varieties. Dear me! how they do grow! When a clematis root is first planted it makes such slow headway for a few years that

one quite despairs of any ultimate beauty. But when it becomes fairly established the case is quite different. Its long branches climb and cling everywhere, and then the flowers come in hosts. The hybrid, large-blossomed clematis do well when grafted on our wild species. Besides the clematis, which has quite led us away from the general topic, there are beds of gladioli and rich blue larkspurs (D. Formosum), the latter standing up as high as a man's waist, and many separate spikes are much taller than this. For both larkspur and gladioli it is now the prime of existence, and the white, purple, scarlet, and sapphire spikes nod across the walk, to the mounds of sweet peas, so delicately pink, so richly purple. I half think that, on moonlight nights, those prim-looking gladioli flirt most outrageously with the tall, carnelian-hued California lilies close by, for they seem to blush every time they look at each other. The beds of annuals, if they have had proper care, are now on their best behavior, and carnation prospects were never so brilliant before. As regards roses, however, the first flush and luxuriance has departed, with the first crop of strawberries, melting slowly into some quiet haven, where, let us believe, the first and purest of everything sweet and lovely lies shrined in dear simplicity. After awhile we shall have more roses. Even now there are enough to fill our vases, and crowd the hands of our visitors. The rose season in California goes by tides of ebb and flood, or rather, like one's heart-beat, in long-drawn diastole and systole. Rest and pulse, pulse and rest, follow one another in tireless iteration. A month of bloom is succeeded by a somewhat sleepy pause, but you have only to water the bushes, and clip off the faded roses, to have a new pulse of blossoming a few days later. Indeed we may, by the exercise of a little judgment, have some roses in bloom each month, and a few buds on every bush, almost each day. Annuals and shrubs may also be cut back and watered heavily to fit them for later bloom.

The various species of Mesembryanthemums are now showing bloom. They are a brilliant and free-blooming class of dwarf-growing plants which are natives of the Cape of Good Hope, and are very useful for beds, edgings, rockwork, vases, rustic baskets, sunny banks, etc. The flowers open and close with the rising and setting of the sun. They root easily from cuttings.

At this season one of the principal objects sought for should be a smooth, well-shorn lawn. Particular attention should be paid to the neatness of the edges of the beds and walks. It takes an almost constant supply of water to keep a grass plot looking well, but it is better to have a small greensward in good condition all summer than to give only half attention to a larger one.

Plants must be staked to secure them from the effects of winds. This applies to strong-growing, autumnal bloomers, and to the taller annuals. Phloxes, Asters, African Marigolds, and many other plants need some support.

Fuchsias in the garden are now in full bloom, and they make very attractive border plants. If arranged so as to harmonize in habits and colors they are choicer bedders. They endure the winter in the open ground, at least over most of California. The dark varieties are hardier than the light ones. Drooping and trailing fuchsias should be grown with a wire hoop to support them. If properly trained they make fine pyramids. This is the best of all forms for the fuchsia. Near the coast, with good

care, they become tree-like shrubs, and thrive for many years.

The spotted geraniums, called pelargoniums, are now in great perfection, though many were cut down by last winter's frosts. There is such a fine contrast in the different varieties, and they afford such an abundance of flowers, that this class of plants is indispensable to the garden. They are divided into many sub-classes. The regals are now more popular than the old fancy varieties. Colors range from white through rose, pink, carmine, maroon, cerise, crimson, scarlet, violet, purple, and many other shades, combined in various ways. It is imposition to recommend any particular kind as superior to another.

The various hybrid Gladioli, which are varieties of G. Gandavensis, are now in their prime, though if some bulbs are yet on hand unplanted, they may be put in moist soil for late autumn blooming. Gladioli are not used sufficiently in masses, and combined with other plants when set in front of dark leaved shrubs, the effect is unsurpassed, for the green background shows off the brilliant and transparent spikes of bloom to the best advantage.

GREENHOUSE NOTES FOR JULY.

The atmosphere of the plant house must be kept moist through dry weather by watering the shelves and paths. Syringe the plants once or twice a day, but avoid wetting the flower clusters. Shade and ventilate, but avoid opening the sashes so much in the afternoons, that the wind blowing in breaks the plants. There is a style of cotton netting in use in some places which is made so as to break the force of the sun's rays and yet admit sufficient light.

Climbing plants, which have their roots in the ground, are growing rapidly. Thin out surplus shoots, and tie the rest to the support. Give an abundance of water, and occasionally liquid manure. Syringe occasionally for the benefit of the red spider. Turn pot plants on the side when syringing, so as to reach the under surface. Dracenas suffer badly from red spider if neglected. Rhododendrons and Azaleas are often infested with thrips. Cinneraria and Chinese Primrose seed may be sown for autumn and winter blooming. As soon as Gloxinias have done blooming, dry them off gradually so as to give them a period of rest.

Gardenias are seldom seen in good condition, but when well grown they are handsome, even for their foliage alone. The pure white and fragrant flowers are charming. Plants which have flowered should be pruned and placed in heat to start new buds, and then shifted to larger pots with rich soil, largely vegetable mold, in which they thrive.

Editorial Notes.

TRAINING ROSES.—The most modern way of training roses is to grow them close to the ground, and peg them down, thus making a carpet, and covering the surface to the bed. We shall always want our standard roses, but the pegging down system should be tried in every garden, particularly in warm localities. It is to be hoped that Santa Barbara, Los Angeles and San Diego will try this plan and report the results.

TWO HARDY AMERICAN FERNS.—Joseph Meehan, son of the well known botanist, says in a recent number of the *Gardener's Monthly* that he has found two rare and beautiful ferns growing near the Wissahickon Creek, which flows into the Schuylkill. The Walking Fern (Camptosorus rhyzophyllus), grows there, and so does the Asplenium pinnatifidum, but the latter is extremely rare.

AN IMPORTANT DECISION.—Californians know well that, in the mineral belts of the State, the miner has reigned supreme. If a man took up a piece of land for farming purposes there was always a possi-

bility that some prospector might find mineral upon it and stake out his claims. Then the burden of proof rested on the farmer, who had to show that his land was not mineral but agricultural. A recent decision is to the effect that the miners, in such cases, shall carry the burden of proof, the supposition henceforth being in behalf of the farmer.

COLUSA CHATS.—The garden that we knew last year has evidently been remodeled as partly told in a letter elsewhere. In this July, when the sound of the reapers is loud in the land, and the header-wagons go out in long lines across the low hills, and whirling header-reels turn dustily in the warm air, and the tired men come in late, and go to bed early—even now, I am sure, this Colusa garden has its due waterings, and is full of buds and blossoms. There, too, with dainty ways, and smiling look, the bright child we remember, goes out to pick rosebuds, and look into the secrets of the lily bells. To see into the heart of things is one of the prerogatives of childhood.

SOUTHERN CALIFORNIA FERNS.—Our valued correspondent, Mr. S. B. Parish, of San Bernardino, has begun a series of articles under the above title, which are now appearing in the *Gardener's Monthly*. In the ravines of Southern California we find, says the writer, the common brake (Pteris aquilina var. lanuginosa), but it does not show the size and luxuriance which it reaches in the northern reg ons. The Bird Rock-brake (Pellæa ornithopus), is found on drier and poorer soil, often scorched by the sun to a dull olive hue. Pellæa Wrightiana much resembles the foregoing, and is found higher up in the same ranges. Pellæa Andromedæfolia is a much handsomer member of this genus, and succeeds well in cultivation. In similar localities the California Polypod (P. Californicum) is found with its "pinnatifid frond illuminated on the back with rows of bright golden fruit dots." Loving sunnier spots is the Gymnogramme triangularis, or Gold Fern, which in some localities has a white powder upon the backs of the fronds, instead of bright yellow, and are then called Silver Ferns, though not botanically distinct.

RICE FOR THE LOWLANDS.—In looking over the field of possible crops for California farmers, we feel an increasing confidence that the tule lands may some of them be utilized for rice, of which, under favorable conditions, two crops may be reaped each year. So long as the Chinese remain on this coast there is a market for rice, and it is time that we ceased our large importations of this easily grown product. Variety is now what we most need. The State should never be one vast wheat field, but hundreds of other products should lessen the risk which is inseparable from single-item farming.

NORTHERN SONOMA GRAPE LANDS.—Sonoma County is one of the most interesting regions of the whole State, and embraces a range of climate and a variety of soil which can hardly be paralleled elsewhere. Going north from Santa Rosa to Mark West Creek the view embraces the golden valleys sloping north and south from the summit of the divide; the rolling foot-hills, as yet but partially cultivated; and beyond and above these, the prominent peaks of the Mayacamas range, St. Helena, Cobb Mountain, and Geyser Peak, dark with deep ravines and masses of pines. The rolling foot-hills near Alexander Valley are red and volcanic soil, of good quality for grapes, as is shown by the fact that it now produces large crops of wheat. As yet these lands can be purchased at low figures.

THE NEED OF FLAX GROWERS.—The coast lands of California are known to produce flax of the best quality. The seed is the only part sold, and the fibre is wasted. There is absolutely no market for the latter. The flax straw this season averages from two and a half to three feet in length, and will simply be burned up. When labor is cheaper here flax fibres can be made into twines, ropes and fabrics; even now there are hopes that it may be used for paper making. The subject is one of importance.

THE DAIRY REGION.—Near the coast of Northern California, where the sea-fogs keep the grass fresh and bright all summer, and the natural pasturage is of the best quality, the dairying business is steadily increasing. Marin County is the dairyman's home, and the coast of Mendocino is now coming into prominence.

THE REVIVAL OF MINING COUNTIES.—Old mining counties, some of them, are waking up. The fruit-future of the sierra foot-hills is hardly possible to over-estimate. The upper Sierra region supplies water for irrigation wherever desired, and there is room for many homes. If a man will take a saddle horse, or if he prefers, a horse and buggy, and will cross the San Joaquin Valley, and search through the mountain roads of Tuolumne, Calaveras, El Dorado, Placer, and Nevada, he will feel that the half has never been told.

CATERPILLAR TENTS.—Whenever, in walking about the garden or orchard you discover a cluster of caterpillars, destroy them at once. They do much injury to trees and plants, eating up the leaves and the young growth of wood.

THE STRAWBERRY PATCH.—When vines are through bearing the first crop of fruit for the season, work the soil over, irrigating if needed, cut off the runners, and a heavy second crop of berries may be expected.

AGAIN, THE TREE PEDDLER.—There are subjects which fit every season of the year, and grievances of so vast a nature that only in fragments can we fairly consider them. We are credibly informed that even

now, in the heart of summer, the farmer, busy in his wheat field, is often approached by the insidious tree-peddler with his red and purple chromos of grapes and apples, his sunset-dyed peaches, his blue-black Utah Hybrid cherries. All we have to say is this: beware of new and hitherto unheard of varieties of any fruit; examine prices and compare them with those of the nearest nurseryman.

A New Fern.—The May number of the Torrey Botanical Club Bulletin contains a description of a new fern of rare beauty, which has been named Netholæna Grayii, and was found in the Chiricahui and Oro Blanco mountains of southeastern Arizona. It is illustrated by an admirable plate from a drawing. The discoverer was Wm. M. Courtis.

Utah Botanical Notes.—There is, in Salt Lake City, a class of botany students, numbering perhaps 30 members, and they take long rambles through the wild ravines of the Oquirrh Mountains. Among the interesting Utah plants is a fine willow, the Salix condita, whose characteristic consists of two stamens under a black scale, while S. nigra, a similar species, has from three to six stamens under a yellow scale. Another interesting plant is Plectritis congesta, which has a trilobate seed cell, two compartments holding seeds, and one being empty, and this assists in scattering the seeds widely. The fragrance of the flower is much like that of Valerian.

Chrysanthemums as Pot Plants.—Whoever has a garden, and chrysanthemums therein, may try the following experiment: Take a large pot, or a box, if you choose; fill it with the richest of earth, adding the strongest fertilizers; take up a healthy chrysanthemum plant and place it in the pot or box; give it careful attention, thinning out most of the stems, and supporting the few which are left; use an abundance of water, soap suds being excellent; the soil must never be allowed to become dry. Treated thus, the size and beauty of the flowers far surpasses the ordinary garden display. The leaves should be syringed often to destroy insects, and the flower buds are to be thinned off if large flowers are desired. Plants which are four or five feet through and average 150 flowers at one time may be obtained in this manner. Chrysanthemums grown thus are unsurpassed for the decoration of halls, parlors, porches, or balconies. No finer decorative plant can be found. The large flowered Chinese or Japanese varieties are better for this purpose than are the pompon varieties. Owing to the natural hardiness of the plant, nothing is more satisfactory for artisans, mechanics, and others who live in narrow quarters in towns and cities. A chrysanthemum planted in an old tin can, or candle box, filled with street sweepings, and kept moist, will thrive in the dingiest alley. In the Chinese quarters of this city these plants are often seen, the yellow being preferred, growing at narrow windows, and on balconies far above the street. It is the sacred flower of the Chinese, and is one of the few ornamental plants thus cultivated.

July Notes for the Aquarium.—The glass of an aquarium, when it becomes covered with a green scum or sediment, should be cleaned by whiting and water, which does not scratch the glass.

Persons often ask how they shall cement bits of tufstein or other rock together when it is desired to form arches, towers, and other fantastic forms of those submarine edifices which are so popular among the owners of aquaria. The only way is to use equal parts of clean, sharp, white sand (such as plasterers use) and Portland cement; mix well before adding the water, then join the rocks as desired, and dry them for a day or two before placing in the aquarium.

Tadpoles are interesting members of the happy family in a well conducted aquarium, but we must sound a note of warning. When the tails disappear, and the four legs fully develop, it is time to look for trouble, as, says the editor of the *Aquarium*, they generally celebrate the occasion of their majority by a free lunch, which may consist of the prettiest goldfish in the place.

To show what can be done with aquariums, we may remark that recently at the International Fish Exhibition, at Berlin, one of the aquaria in which the water had not been changed for two years there were about twenty species of fish and many aquatic plants preserving a perfect balance with each other. The American Axolotle is much used. The fish of the future for aquaria is thought to be the Macropodes, also called Paradise fish.

Moving a Large Tree.—His Majesty the King of Belgium, having acquired the collection of Palms in the green house of the late Duke d'Aremberg, at Enghien, found there an enormous specimen of Sabal umbraculifera, nearly 50 feet high. This gigantic specimen was moved from Enghien to Lœken on a wagon capable of supporting the twenty-six tons, which the plant with the ball of dirt weighed. It was drawn by 21 horses. Probably this is the largest tree ever transplanted.—*L'Illustration Horticole.*

New & Desirable Plants.

[We shall glean from our exchanges and correspondence, notes on plants either new, or of promise in our climate. Our nurserymen are invited to send notes on any interesting plants received.]

New Plants of 1879.—Among hardy shrubs the Hibiscus syriacus var. cœlestis is, perhaps, the most striking—not absolutely new, but so little known that its novelty has not yet worn off; the flowers, of a soft celestial blue, with crimson eye, are very charming. The variety which bears the somewhat

ungainly name of H. syriacus totus albus, is also a good introduction, the flowers being pure white, and produced with exceptional freeness. Two fine single white lilies, of garden origin, have been made known —Syringa vulgaris alba grandiflora, a very fine pure white, far superior to the older whites, and S. Mdlle. Marie Legraye, a splendid form, with white flowers fully an inch across. The Weigela candida of the French garden is another valuable white-flowered hardy shrub, vigorous in habit and very prolific of blossoms. Yucca gloriosa elegans variegata, extremely rare, is a remarkably handsome plant.

The most striking herbaceous perennial is the Conandrum Ramondioides, a native of the higher mountains of Japan and not likely to succeed here, except in corresponding situations. A very pretty Spiræa, S. nivosa, from Japan, has showy panicles of abundant white flowers. Iris iberica insignis is a much improved form of that fine species, which was selected from a batch of imported roots. A fine Campanula grown in French gardens under the name of C. Van Houttei, is in the way of C. nobilis, and has the large drooping blossoms of an indigo blue.

In stove plants the first place must be claimed for the Bornean Bnrridgea nitida, an exogenous plant, belonging to the Ginger family, thriving under the same treatment as Alpinias and Hedychiums; it combines botanical interest with floral beauty. Its tall clustered stems bear elliptic-lanceolate leaves and are surmounted by panicles of from twelve to twenty rich orange-scarlet flowers, of which the three outer segments are broad and spreading and the inner reduced to a small bifid yellow lip, placed opposite to and folded round the anther, in which resides its botanical singularity. In its native country, Mr. Burridge states, it grows and flowers for nine months out of the twelve.—*Gardener's Chronicle.*

Crinodendron Hookeri.—This is one of the most romarkable new plants we have seen for a long time. It is a shrub with foliage much resembling that of the common Bog Myrtle. The flowers are produced singly on the ends of the branches. They are the size of small walnuts, conical in shape, with a small contracted orifice, and deeply ribbed. They are of a thick waxy texture resembling that of the flowers of Lapageria rosea, and are exactly the color of the typical form of the latter plant. It is a native of Chile.—*London Garden.*

Pinanga Veitchi.—This is a Bornean Palm. It is figured in the *Garden* of May 15th. It is of tufted habit, growing about four feet high, and has a more marked variegation of foliage than any other palm.

Anthurium Scherzerianum Rothschildianum.—The whole of this name belongs to a flower which the *English Garden* describes as being a hybrid between the white and the red Anthurium. This hybrid is spotted white and red. The Anthurium is sometimes called the Flamingo plant.

Pomological Notes.

The Sun Scald on Apple Trees.—In the Russian River Valley, near Healdsburg, the sun scald has injured many apple trees. An observing farmer of that locality says that the greatest danger from sun scald is when the leaf-buds are beginning to open. If hot weather occurs at that time the sap is nearly sure to be injured, the bark turns dark in color, and the edges of the terminal leaves curl up. Young trees are affected most, the old trees seldom suffering. Some years one variety suffers most, and some years another. This depending upon whether or not they are caught by hot weather when in this susceptible stage.

Dry Surplus Berries.—Dried raspberries and blackberries are always in demand. One hundred pounds of the fresh fruit will make thirty pounds of dried. There is no nicer dried fruit for family use.

Try English Gooseberries.—Our correspondent, Mr. Wagenseller, of Ukiah, has had eminent success with the English prize gooseberries. Though these usually mildew in this climate, there are doubtless many spots in the northern coast counties where they will succeed. There is money in them for our markets, as the small American varieties are all that can be purchased now. Such large prize berries as we read of in the English Fair reports would create quite an excitement here.

The Chile Garnet Strawberry.—Occasionally a few boxes of this fine berry appear in our markets, but there is little profit in growing them, for the vines are remarkably poor bearers. If a hybrid could be obtained which united the size and firmness of this berry to the bearing qualities of the best market kinds, there would be no limit to its popularity.

The Sharpless for Market.—We were lately shown a box of Sharpless strawberries sent to this market from Alviso, and, though chosen with extra care, the berries were badly bruised, thus proving that this is too soft a berry for general market use. But its beauty and size are so much in its favor that it may be the best kind where the market is very close to the place of growing.

Pack Your Fruit Neatly.—It ought not to be necessary to give directions upon this most important of the orchardist's labors. Care in choosing valuable varieties, in preparing the soil, in planting the trees, in cultivating and pruning them, in thinning the surplus off, and in picking the fruit—all this goes for naught in the final outcome unless the marketing of the fruit is well done. Many a man toils hard, the year through, and yet fails to reap his deserved reward because he has neglected the art of neat packing. A little poor fruit in a box spoils the

sale of the best. Men learn to purchase not by the upper tier, but by those lower down. The fruit grower whose apples, peaches, and pears average the same all the way through will at last build up a reputation which will bring in the coin. These are trite statements, and yet they need constant repetition. It is a fact that new, clean boxes, good assorting, and careful labeling are essential in this market. Poor or badly packed fruit has no chance whatever, and should never leave the orchard.

The Early Alexander Peach.—The fruit of this variety which has been in market this year shows that it is a finely colored and choice early peach, and it should find a place in every orchard. Indeed we urge farmers to plant a few trees of these early peaches, for they extend the season considerably. Amsden's and Briggs' May are much like the foregoing. Waterloo promises well.

Profits of an Orchard in California.—It is sometimes said that there is no longer any profit in orchards. We will mention a fact which has just come to our knowledge and leave our readers to draw their own conclusions. A gentleman six years ago bought eight hundred dollars worth of trees which he planted on about thirty acres of land. During the time his trees were growing he cultivated vegetables and currant bushes between the rows of trees, and thinks this paid all the expenses of caring for the trees and a fair rent for the land. Last year he sold his fruit for about $1,500, and this year, six years after planting, he has been offered $2,000 net for the fruit on the trees, and does not think it is to his interest to take this sum. This occurred in Alameda County, and we are well acquainted with the circumstances of the case.

Blueberries in the West.—In their native regions blueberries are usually too abundant to receive much attention, except as to the gathering; but an idea was given me, a year or two since, which might be of benefit to others. An enterprising German woman offered some berries for sale, which were so much larger and nicer than any I had seen, that I was led to inquire where she found them and was answered that she raised them in her garden. While her neighbors were climbing over hills, in the hot sun gathering berries, she could gather her own in the cool of the day, and market them at her leisure. It might be a problem worth solving, if the time and labor that would be consumed in toiling over hill and dale in pursuit of this fruit might not be more profitably employed in raising a supply at home.—*Prairie Farmer.*

Coal Ashes and Gooseberry Mildew.—A correspondent of an exchange writes as follows: Every one who has tried them knows how difficult it is to grow the larger and finer kinds of English gooseberries on account of mildew. Recently there has come to the knowledge of the writer two instances in which the growers have succeeded with them, the choicest English kinds proving as hardy and free from leaf-blight as Houghton's or any of the native seedlings. The mildew was prevented by the application of a liberal coating of common soft coal ashes; and coal ashes, so far as relates to the imported gooseberry, may be considered a specific for mildew at least on some soils.

Summer Pruning of Raspberries.—If young shoots of raspberries are pinched back before they reach too great a height, it will exhaust them much less. By taking off the tip at about thirty inches you will make them throw out laterals. These should be again pinched back and you will have strong, well-formed bushes.

Reviews and Exchanges.

The Torrey Club Botanical Bulletin.—

Month after month this valuable publication comes to us, and receives much more than a passing glance. It is worth the while of young botanists to send a dollar to P. V. Leroy, Herbarium, Columbia College, New York, and subscribe for one year. The April number contains a review of the club's proceedings, an article on the late Coe F. Austin, notes on the Pines, on Fresh Water Algæ, and on the differences between Cyterus ovularis and C. cylindricus. The latter is illustrated by a plate.

Now, let us see what interesting facts we learn from this number. At the regular meeting, April 13th, Prof. Wood exhibited the fruit of Rhus diversiloba from California, and he read a paper on botanical terminology, advocating the adoption of the terms midvein, veins, veinlets, and veinulets, to designate the venation of leaves. Not least among the botanical labors of the past few years has been that which Dr. Engelmann, of St. Louis, has done for the genus Pinus, which offers so many stubborn obstacles to the natural classification of its species. Dr. Engelmann finds the most valuable characteristic in the fruit scale. The subsections are distinguished by the place of the resinous leaf-duct. The use of this feature is the new point about his classification. Persons making a study of the Pines can not afford to be without this monogram.

Circulars for small fruits, potatoes, apples, etc.; Frank Ford, Ravena, Ohio.

Commissioner of Agriculture; report for 1879, mainly devoted to notes on sorghum culture.

Department of Agriculture. Report for 1878. Contains very valuable statistics.

New Remedies. An illustrated monthly trade journal of Materia Medica, Pharmacy and Therapeutics. Wood & Co., publishers, 27 Great Jones Street, New York.

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Contributed Articles.

NOTES ON THE FLORA OF PLUMAS COUNTY.

By MARY E. PULSIFER AMES, Auburn, Cal.

On a balmy morning in the month of May we left our home near Auburn, on a botanical pilgrimage to Butterfly Valley, some twenty-five miles distant. This isolated, though charming retreat, is the habitat of one of California's most rare and curious plants — Darlingtonia Californica, Torrey — which flourishes here in all its native wildness and luxuriance. A botanical friend, Mrs. R. M. L. Austin, at whose hospitable home we were most cordially entertained, resided here, and was then engaged in making the series of very interesting and valuable observations (that have made her name so famous at home and abroad) on the physiological structure and habits of this most wonderful plant. The natural order, Sarraceniaceæ, to which this plant belongs, is composed of three genera and six or eight species, the Heliamphora of Guiana, the Sarracenia of the Atlantic States, and the Darlingtonia of our own favored California. The plants of this order are remarkable for the peculiar and novel form of their leaves, which belong to the class called ascidia, or pitchers, "expressly contrived, as if by art, for holding water." The pitchers of Sarracenia, the several species of which are quite abundant in marshes both north and south, are formed by the union of the involute margins of the winged petioles so as to form a complete tube, which is enlarged toward the apex. The petioles, or that part corresponding to the stem of leaves, differ essentially from the Darlingtonia, which have twisted tubes surmounted by an inflated, vaulted lamina or hood, analogous to the blade of leaves, with the orifice on the under side, thereby precluding the possibility of the reception of any rain water into the tubes. The apex of the leaves is fancifully variegated with red and yellow semi-transparent spots, intermingled with prominent green veins. The upper edge of the orifice is provided with a singular appendage of a dark-red color, corresponding to the hood in Sarracenia, but wholly unlike it in form, being quite narrow at its point of attachment to the hood, where it begins to widen rapidly and divides into two laminæ, the entire appendage resembling the tail of a fish. The tubes being armed with retrorse hairs, or bristles, offer no resistance to the entrance of the unsuspecting vic-

tims; but when once within this deadly vegetable stockade, no egress is possible, and no relief comes except through death. The plant is a most successful fly-catcher, the matured tubes in every instance containing, to the height of several inches, dead and macerated insects. The petioles, varying in length from eighteen inches to two feet, are inflated and increase in size toward the summit. The scape bears a solitary, pendulous flower, and, owing to the peculiar arrangement of the essential organs, its fertilization can only be effected through the agency of insects. Among the many interesting characteristics discovered by Mrs. A., none, perhaps, is more wonderful than her detection of the great increase of the liquid in the tubes when fresh meat is introduced. This important discovery is particularly gratifying to herself and friends as being made and recorded prior to receiving Darwin's "Insectivorous Plants," where he notes the same fact in reference to Drosera rotundifolia. From a recent letter received from her, I make the following extract in reference to this discovery: "In July, 1875, I fed a great many of the leaves, some with fresh raw mutton and others with that which was boiled. The liquid, in the course of a week, would fill the tubes and flow out of the orifice." The next in importance was her discovery of innumerable white larvæ in the tubes of new leaves before the opening of the orifices of the hoods.

This excursion afforded a long-desired opportunity of making a few experiments regarding the assimilating capacity of Drosera rotundifolia, L., a small marsh plant found growing quite abundantly and in close companionship with the Darlingtonia. The leaves, orbicular in form, are covered with crimson glandular hairs, each hair being tipped with a viscid secretion which glistens in the sunlight with the brilliancy of diamonds. The leaves, when open, present a convex appearance, and remain in that position until an unwary fly, moth, or other insect, alights upon its surface, when the leaf gradually closes over its prey, and it becomes wholly enveloped in this glutinous fluid, and so remains until digested, when the leaf again opens and thus awaits its next victim. This exudation, which appears to possess similar properties to the gastric juice, acts as a solvent upon any meat or organic substance which may come in contact with the leaf. We experimented with cake, hard-boiled egg, and salt; dividing the egg into small pieces, we placed it upon the leaves, and in a few seconds the hairs of the leaf began to turn toward the egg, while the margin, with its fringe of hairs gradually curved toward the centre, accompanied by a nervous, tremulous motion, which occurred a intervals of a few seconds each, until the egg was entirely inclosed by the infolded leaf. This nervous motion was also communicated to the leaf opposite, as if a close sympathy, born of hunger, existed between them. If an insect, this imprisonment would, of course, result in death. In many instances, when the bit of egg was unusually large, two, and even three, leaves were observed to infold the same piece. We examined several leaves which we found closed, and, upon separating their surfaces, discovered the skeletons of dead insects. Having given to one leaf an overdose of salt, it drooped and died, being actually killed; a diet of worms is evidently more palatable and better adapted to their wants, so this experiment proved. In other instances, when the quantity of salt administered was small, it would

be rejected. In consideration of the remarkable power of discrimination which these little plants possess, we almost—as did the ancient philosophers to similar plants—feel like ascribing to these a soul. This anomalous endowment of plants with a structure so wonderful and an organization so finely attuned that it enables them to entice and assimilate insects whose animal juices seem to be indispensable to the maintenance and perpetuation of their existence, opens to the thoughtful student an endless field of investigation.

Allied to this plant, and belonging to the same order, Droseraceæ, is another of carnivorous tastes and habits, the Dianæa muscipula, a rare local plant, "native of the sandy savannas of the eastern part of North Carolina," of which Dr. Gray observes, "So noted for the extraordinary instability of its leaves, closing quickly at the touch." In 1768, Ellis, the celebrated English naturalist, who bestowed upon it the poetical name of Dianæa, made a drawing of the plant and sent it to the immortal Swedish botanist, Linnæus, who declared it to be the most wonderful plant he had ever seen.

Hour after hour was delightfully passed in lingering about this favorite haunt singularly endeared to me by the charming companionship of this cherished friend whose name is entwined with the wonderful Darlingtonia, and the lovely valley over which it holds such enchanting sway. On Black Hawk Creek, in the vicinity of the romantic Butterfly Valley, is found the Saxifraga pellota, the largest of the saxifragas, whose giant leaves bear a striking resemblance to a huge umbrella. Its rose-colored flowers, appearing before its leaves, are very beautiful. It has already become a general favorite with florists, because of its excellent adaptation for borders of artificial lakes and ponds, and created a great sensation in England, where it flowered for the first time in 1874.

Owing to the elevation, and the rugged and hitherto almost inaccessible region which these plants inhabit, little or no opportunity has been afforded to botanists for making the structure of these plants, particularly of Darlingtonia, a study, since its memorable discovery by the Wilkes exploring expedition in 1842. But happily, with increased traveling facilities, better roads, and excellent hotels, the Northern Sierras, with their rich and varied flora, need no more be a *terra incognita* to botanists.

Forests of pine, cedar and fir clothe these mountain slopes in ever-living verdure, and form the principal part of the larger growth, conspicuous among which that noble monarch among pines, Pinus Lambertiana, rears its colossal form to a height of three hundred feet. The beautiful Abies Douglasii, which by its size and height also adds a fine effect to the imposing and often gloomy scene, commands our allegiance for its sombre grace and beauty; another, the Abies grandis, likewise claims a large share of admiration, and may be readily distinguished from the others by its silvery, smooth, and shining bark. Their grace and symmetry being enhanced by the exquisite adornment of a golden lichen, the lovely Evernia Vulpina, while here and there, in graceful festoons, depend the beautiful, long hair-like moss, Alectaria jubata.

The admirer of the curious and beautiful in the floral kingdom, who has never gazed upon the magnificent snow-plant, Sarcodes sanguinea, in its native haunts amid the grandeur of mountain solitude, has yet to look upon a plant the remembrance of whose gorgeous,

crimson beauty will ever linger an immortal picture, illuminating memory's fairest page.

In early spring the Claytonia, Viola, Œnothera, Dodecatheon, Erythronium, and the dainty red bells of Fritillaria, including many other bright-hued blossoms, only await a friendly smile of recognition from old Sol, the patron saint of flowers, to come forth and gladden the earth with their delicate tints and fragrant beauty.

In May the mountain slopes and cañons are white with the fragrant snowy bloom of the lovely Ceanothus integerrimus, while the lowly blue-flowered C. prostratus covers the earth with its soft mantle of green; and at higher altitudes the splendid C. velutinus, with its profusion of creamy-white flowers and large, broadly ovate, shining leaves, fills the air with a delightful, resinous odor. I remember having once seen this strikingly handsome shrub cultivated in a private garden in beautiful, flower-loving San Jose. The pretty and highly ornamental tree, Cornus Nuttallii, commonly known as dogwood, often attains a height of sixty feet, and is also very abundant in the cañons and along the courses of mountain springs. The branches are numerous and spreading. Its true flowers are inconspicuous, greenish-yellow, in dense heads, encircled by a white corolla-like involucre, which, added to the charm of its rich foliage, gives the tree a very marked appearance, even at a long distance. It is well worthy a select spot in any garden. Its black and crimson drupes in autumn are no less showy and beautiful than are its flowers in spring; thus it remains "a thing of beauty" throughout the season.

June, poetically styled by the Orientals "the moon of flowers," brings us the queen of summer's fairest children, Lilium Washingtonianum, Kellogg—a lily of superb beauty, possessing all the stately grace of the renowned Japan lily, and rivaling it in fragrance. The stems are two to four feet high, surrounded by several whorls of leaves, its pedicles bearing from twelve to eighteen pendulous wax-white perianths, having the centre of each sepal tinged with a rich creamy hue.

Many fine species of Eriogonæ are abundant here, fringing with beauty the sunny mountain slopes, and among them all none is more pleasing to the eye than the new species, Eriogonum ursinum, described and named by Mr. Watson. The meadows are embellished with the hues of many attractive and beautiful blossoms consisting of the Pentstemon, Potentilla, Mentzelia, Mimulus, Aquilegia occidentalis, and the deep blue plume-like racemes of Camassia esculenta of Lindley; while the air is redolent with the perfume of the innumerable snowy spikes of Polygonum bistorta, Senecio, three species of Lupinus, two of Calochortus, and in shady recesses, beneath the protecting willows, the charming red and blue bells of Mertensia Sibirica, and the fragile, delicate loveliness of Cypripedium passerinum lends enchantment to the scene.

But surpassing all our other plants in the intensity of its coloring is the scarlet Zanschoneria, brightest gem in autumn's diadem; while the fairy-like wands of the golden rod — Solidago — with its trusting faith, looks up to heaven before the summer days are fairly over, gathering unto itself the beauties of sky and earth. Purshia tridentata, Frangula Californica, and the highly interesting Garrya Fremontii, the latter much resembling the manzanita in its habit of growth, are

also present; its long, drooping aments of silvery blossoms impart to this evergreen shrub a unique appearance.

Growing in the quiet seclusion of Fern Dell, near Butterfly Valley, is the beautiful evergreen shrub, Leucothoë Davisiæ, having smooth, bright green leaves, and bearing on slender racemes an abundance of pendulous white flowers; and near it may be found the favorite haunt of the elegant new Aspidium Nevadense, Eaton, its graceful fronds coquetting with the golden sunbeams that sometimes stray through the dense foliage of the balsam-breathing pines.

At the Big Spring, Big Meadows, the new, rare, and exquisitely beautiful Corydalis Caseana, Gray, is found. Its distinguished discoverer, the eminent botanist, Prof. J. G. Lemmon, now of Oakland, also detected it in another locality, near Mohawk Valley, in Plumas County. Our enterprising English cousins, over the water, already have this plant under cultivation, by whom it will be valued no less for its extreme beauty, slender, graceful habit, than for its deliciously fragrant flowers. Here also is the Sedum stenopetalum, whose golden loveliness adds a delicate charm to and relieves the severe ruggedness of the huge bowlders it crowns. Nestling within the crevices is the Shield Fern, Aspidium munitum, which proudly bears erect its stately fronds, giving an airy grace to the weird gray outline of the rocks to which it so tenderly clings :

" Into your heavenly loveliness
Ye welcomed me, O solemn peaks !
And me in every guest you bless,
Who reverently your mystery seeks."

It is time to gather pansy seed, and indeed many others. Pick carefully, and label with due exactitude.

PASADENA HEDGES.

By JEANNE C. CARR, Los Angeles County.

I am a hater of fences, and often refresh my weariness with memories of a virgin prairie land where the sun rose and set in the green, rolling sea of verdure, and the only trace of ownership was in the trees blazed by the pioneer surveyors of the then "New Northwest." I think it is bad enough to be forced to spend so large a portion of one's life under roofs, but it is even worse to be constantly reminded of our "fallen estate" by man's efforts to keep out intruders and to prevent trespass.

One fence I remember which Nature had "reclaimed." It was made of white pine stumps, and defined the limits of a wood lot in the Green Mountains. Dear Paradise of chipmunks and squirrels, covert of partridge and whip-poor-will, vine wreathed and be-brambled, I see through its netted openings the aisles of a dim old forest, lovely as that of Alice Cary's melodious verse.

It is a hopeful indication of the coming millennium when a community can agree to cast off the delusions of carpentry, even the iron railings and stone copings which separate rich neighbors, and allow the unbroken sweeps of velvet turf to touch the very edge of the gravelled roads. And it is charming to notice how much this treatment of ground adds to the sense of privacy and retirement. It may be seen in perfection in the park-like villages of New Jersey, in the city of Cleveland, and on Jackson Street, Oakland.

One of the charms of Pasadena is its fencelessness. Climbing the Porter Grade on entering the settlement by the "Arroyo Road" from Los Angeles, one meets a double surprise in the commanding view of the Sierra Madre range of mountains, with the higher peaks

toward San Bernardino, and the picturesque cluster of homesteads which is is now the social centre of the San Gabriel Valley.

The eye of the visitor is not diverted from the noble mountain scenery, for the houses are set far back from the streets, and already hidden in masses of foliage. A vine-covered porch seen down a lane of orange trees, or the lines of roofs and chimneys rising above the orchards, invests the natural scenery with a human interest at once, but there is no jostling or crowding. The roads are of Nature's best making, and the wonder is that her beaten trails should have been so respected.

One mistake only threatens to impair the future beauty of Pasadena, which is not yet past being remedied, the principal streets should have been not less than one hundred feet in width, and so variously planted as to form a noble boulevard.

There are about one hundred homesteads in this settlement, and not one white paling, or ambitious gateway. Instead of them there are only well kept hedges and screens of evergreens, or the lines of avenue trees. Choosing to descend the vale of years among a people so singularly unanimous on a vital subject, I said to Paterfamilias, "We must make *our live fences* subjects of prayerful consideration." "Pocketful," he corrected, reminding me that Mr. Titus' superb lime hedges were not to be recklessly imitated on a large scale, though they might in time prove a very marketable form of beauty. So we set our first hedge of Mexican limes, seven hundred and fifty feet in length, along Orange Grove Avenue, putting the trees eight feet apart that we might diminish the first expense, keep the ground free from weeds and gophers, and while at this distance they would form a close mass at the top, they might with good cultivation produce a fair quality and quantity of fruit. Two exceptional winters out of the three which covers our experience have discouraged the growth of lime hedges in the vicinity, but ours stands unharmed, a line of pepper trees set along the avenue outside the hedge having sheltered it from the cold winds. No other hedge is so beautiful or appropriate for the citrus orchard as the lime, and no miniature tree exceeds it in beauty when grown in open spaces. The magnificent new, though not yet well defined varieties, produced at Riverside promise to open up a new era in this culture.

Our lot, long and narrow, is bounded on three sides by public streets. On the opposite side of Colorado Street Dr. Conger had already planted a hedge or wind-break of Monterey Cypress, now some fifteen feet high. To give a little more uniformity to this section of the street, we planted Montereys also, with Cherokee roses between, and occasionally the "Teinturice" grape. By clipping the cypresses and keeping them not more than four feet high, and allowing the roses and grapes to clamber at will over the green wall, we hope to gain a touch of wildness, as well as to secure plenteous bloom in spring, and color for autumn thoughts.

A cart path winds through our vineyard, accommodating itself to the slope of a hill, and this we are bordering with Mexican plants as fast as we can obtain them. A defense made up of Agaves, Yuccas, and Cacti, exists mainly in imagination, but the stock for it is in the nursery, and any lover of flowers can believe that a line of Spanish Bayonets in full flower would challenge the admiration of a stoic.

Some two thousand feet on either side of Colorado Street is planted with En-

glish walnuts, already beginning to bear fruit. On one side we have planted the pomegranate among these, eight feet apart for the entire distance, more for the beauty of the hedge, when in flower or fruit, than for profit. As all our roadsides are kept free from weeds, and as well cultivated as any part of our possessions, the walnuts are not robbed by the pomegranates, though it is not likely that the latter will grow as well under the walnut shade. The pomegranate planted by itself makes one of the prettiest orchard hedges. There are several of them in the colony. Fair Oak Avenue divides Pasadena from the Lake Vineyard Colony. During the spring both sides of this avenue were set with the Monterey Cypress for a distance of three miles; this to be kept as a close, low hedge, and will be clipped with a machine. Of interior hedges we have several kinds, some merely for illustration. The purple Barberry segregates that portion of our grounds devoted to the barn and poultry yards. Our berry gardens are hedged with the Sweet Myrtle (Myrtis communis).

Another line was intended to be screened by the California Cherry (Cerasus or Prunus illicifolia). The seed, kindly furnished by our excellent friend J. V. Webster, of Fruitvale, was attacked by gophers or squirrels, and the few thrifty plants which were spared are scattered in our forest section. But the finest hedge I have ever seen in California, Mr. Wheeler's at San Mateo, was of this cherry, and we are resolved to have one at any cost.

Several pounds of tea seed, imported from Japan in 1878, was placed in the hands of one of our most successful nurserymen in order to experiment with it as a hedge plant. It sprouted and grew finely until a norther came, at a time when the screens were left off, blighting the plants, and this experiment must be more carefully repeated hereafter. I wish to extenuate nothing in regard to failures and mistakes. Cratægus pyracantha is one of our best hedge plants, and we propose making a short belt of it another year. The Mandarin orange makes a very pretty screen, and is used for this purpose to some extent. There are many pretty hedges of roses also; the privet is not common here. We are trying many valuable Eastern plants, the Hemlock Spruce, Hawthorn, American Thorn, in order to test their adaptability to our climate.

Our private efforts are unimportant compared with the larger one which the people of Pasadena and Riverside are working out in the attempt to build up a model community, where rural industries may flourish without social isolation, where educational facilities may be adequate without sacrificing home education, and where every creator of beauty and use is an acknowledged benefactor.

The man who roots himself thus firmly to the earth, knitting the fibres of neighborly good fellowship as firmly, has a fairer chance to rise like the trees of his planting into the free heavens, to endure as they endure, than in the overcrowded callings or professions.

Happily there is room on these sunny table lands and broad valleys not only for the successful pioneers of the new El Dorado, for health seekers and viniculturists, but for hundreds of young experimenters in family life, who will find their bonanzas in the still unappropriated railroad and government lands upon our borders.

Pond lilies in a suitable tank are a great consolation at this season.

DOWN AMONG THE MEXIC BOATMEN.

By D. S. Richardson.

[The following article is a continuation of Mr. Richardson's previous wanderings on foot in the valley of Mexico, an account of which appeared in the June Horticulturist. The curious sights and the strange, half civilized boatmen of these clustering lakes were never more clearly described.—Editor Horticulturist.]

The two principal lakes of the Valley of Mexico are Texcoco and Chalco. These bodies of water are separated by a low range of hills which extends down into the plain from the southeast, extending, perhaps, half way across to the opposite mountain wall. The basin of Chalco is slightly elevated above that of Texcoco, which results in a flow of its waters towards the latter lake. The connecting link between the two is, however, artificial. In former years, when the waters were higher and encircled the city, these two lakes passed around to the north and west of the range of hills referred to and mingled their waters upon what is now a wide, fertile plain, blooming with vegetation. During the last two centuries, however, these waters have receded and been drained away, and the lakes have retired each to its separate bed. A canal is now the connecting link. This artificial stream passes out of Chalco, winds in and out along the valley, creeps around the point of the separating ridge, sweeps through the suburbs of the great city, and finally mingles with Texcoco. Its entire length will not exceed a dozen miles. A peculiar feature of these lakes is the fact that the waters of Texcoco are salt and brackish while Chalco is pure and sweet, and although the latter is constantly emptying itself into the former no perceptible change seems to take place in the character of its water.

It is along this canal that the famous floating gardens or *chinampas* of the natives are found. Prescott tells as all about these things! Long ago, when the lake was high, they may have floated, but they do not do so now. It is easy to understand, however, how such a thing might be on a small scale. Where the canal comes out of Chalco and far into the bosom of the lake are dense masses of floating vegetation. This accumulates from year to year and is anchored to its place by living vines and plants which spring from the bed of the water. A thin soil gradually forms from the rotting plants, seeds are drifted upon it, and a new vegetation starts. I have seen little islands of this kind a few yards square with an elastic crust of soil, and young willows growing bravely out of them, which would dip and sink from sight under the pressure of my oar, and then rise like a duck in the wake of my boat. These become firmer and firmer as you draw nearer to the shore, and finally when you reach the first little cultivated patch with its straw hut, canoe, and bare legged proprietor, you strive in vain to submerge it. It will not budge an inch, and you are forced to abandon your long-cherished dream of sunny islands rocked upon the bosom of tropic lakes, happy with singing birds, and brown armed maidens. It is along this canal that the gardens are found which supply the city with fresh vegetables. They do not float, but they are, nevertheless, and the Indians who occupy them, semi-aquatic in their nature.

For half a mile on either side of the grand canal the country is threaded with a perfect net-work of smaller canals, which lead away the water for irrigation purposes. Each little garden

plot is an island, and it is impossible to go any where except in a canoe. A stranger would lose himself at once in this labyrinth of water courses, but the native glides in and out and comes and goes in his little skiff, happy in his native element, and filling the canals and shaded water courses with life and animation. The scene on the grand canal in the early morning is picturesque and full of interest. From a hundred side streams suddenly appear crafts of all descriptions loaded down to the water's edge with vegetables and flowers. An Indian with a single paddle sits in the stern of each canoe and propels it swiftly and skillfully along through the myriad crafts towards the city. This person is often a woman, and her black hair floats out behind her as she bends over her paddle, and her white teeth flash as she laughs and answers merrily to the hails of her companions in the other boats. Sometimes, if the canoe is a large one, the vegetable man takes his whole family on board, and while he stands up in the stern and paddles his craft along, his dusky spouse sits far forward and nurses her little one or arranges the vegetables and flowers for market. On feast days and flower festivals the scene is full of beauty. Every Indian twines a wreath about his hat, the women and children deck themselves with flowers, and the fleet of boats comes down the stream with its occupants singing and—on the larger boats—dancing the *jarabe* at the bows. The *jarabe*, familiarly known in California as the fandango, is the favorite dance of the native Mexican. A man and a woman stand opposite to each other (or, when the women are scarce, the men pair off) and dance or rather stamp a kind of a smothered shuffle which is neither clog dance nor reel. The dancers do not need much space to execute it successfully, and hence the large, flat-bottomed freight boats which ply between the city and Chalco afford ample accommodation for these simple revelers. The music on these occasions is usually a harp and a *bandolon*, the latter being an instrument much like the guitar, with twelve metal strings, and the dancers generally chime in with their voices, making a wild chorus which, once heard, can never be forgotten. I know of nothing more picturesque than a fleet of these noisy flower-decked boat-people out for a feast-day "lark."

It was down towards the home of these lake men that Morphy and I directed our footsteps after leaving the mountain hut where we had spent the second night of our tramp. Chalco was to us an untried field. We had seen something of the canal and its gardens, but out beyond all these was something more. Clustered in around the body of the lake are numerous Indian villages, some of them half in the water and half out. There are villages and clusters of huts on the little islands far out in the lake, and causeways lead here and there, from swamp to swamp, from shore to shore, and from village to village. For miles the country in every direction seems to be half water and and half land, and it is difficult to say just where the lake begins and ends. The inhabitants of these water towns are mostly fishermen and duck hunters. They seldom go out of their swamps, and have retained more of the characteristics of the old Aztec tribes, as the Spaniards found them, than any other Indians of the valley. They still retain their aboriginal tongue, and many of them have no knowledge whatever of Spanish. They are shy of strangers and look with suspicion and distrust upon the traveler who ventures into

their haunts. In habits and manner of living they are as simple and rude as were their forefathers centuries ago, and their bare comfortless huts suggest beaver haunts and blackbirds' nests among the tules. Notwithstanding all this, they are as healthy and as happy as any people I have ever seen. In order to live it is not necessary to work hard, and they sing and drink *pulque* and skip about from hut to hut in their little boats and do not seem "to care whether school keeps or not."

Half a day's steady walking down from the sierra brought us to this watery land, and about noon we found ourselves at the entrance to a long winding causeway which appeared to lead somewhere out among the islands and villages. Morphy suggested that we turn in here to explore; so shaking the dust of the mainland from our feet we stroke in among the willows. For a mile or two nothing of special interest presented itself, and then the causeway began to widen a little, and a turn to the left around a clump of willows brought us upon the outskirts of an Indian village. We had been attracted by sounds from this place some time before it came in sight, and had rightly judged that a feast of some kind was in progress there. The music of a flute accompanied by several stringed instruments floated out over the water, and every now and then a wild chorus of voices rang out in a startling manner as though a hundred maniacs were skylarking in the swamps. It was evidently a very festive occasion, for nearly all the dusky denizens of the waters were there, and a long line of canoes was pulled up against the bank of the causeway with their prows projecting skyward. The fandango was in full blast when Morphy and I stepped suddenly upon the scene. Instantly everything was hushed. The unexpected and unusual appearance of two white men upon such an occasion seemed at first to produce consternation. The musicians stopped playing, and the dancing ceased, and there was a hurried running to and fro as though some of the party wished to conceal themselves. We were as much surprised, however, by the effect of our visit as they seemed to be at seeing us; but Morphy was equal to the emergency, and stepping promptly forward he spoke to them in Spanish and desired them to continue their festivities. He assured them that we had no disposition to disturb them; that we were simply drifting about for recreation, and that we would be glad to rest awhile in their village and see the people enjoy themselves. Although evidently somewhat suspicious of us and our weapons, this speech of Morphy's had a good effect. Half a dozen stalwart young fellows, naked to the waist, advanced from the crowd to meet us. On reaching us, much to our astonishment, they broke out into a wild, ear-splitting chant, their voices pitched very high and at all angles—if I may use such a word. We did not know what it meant, but as it seemed to be friendly in its character we did not object, and permitted ourselves to be conducted into the plaza, or open space where the dancers stood, with these fine fellows circling about us like howling furies. *Pulque* was offered to us and *tamales*,* and a bare breasted Amazon brought us a tule mat and in-

* The *tamal* is a great delicacy in Spanish America. It consists of a cake of corn-meal, with a piece of pork or chicken in the centre, and is generally highly spiced with peppers. Thus prepared, it is wrapped in a piece of corn husk and boiled. The *tamal* must be eaten while hot. The mountain overlooking the bay of San Francisco is supposed to have been named from this article. *Tamal* and *pais*. *Pais* meaning country, the word *tamalpais* thus signifying the country of the *tamales*.

vited us to sit down upon it under a tule awning.

As soon as the curiosity of the people had subsided a little and they had satisfied themselves that we were not government agents beating up army recruits, or blood-thirsty foreigners leading in an army of barbarians—they call us of the outer world barbarians—the music struck up again and the dancing and singing recommenced. It was a wild, animated scene, and for an hour or two we enjoyed the novelty of our adventure.

As the afternoon wore on, however, and the Indians began to fill up on *pulque* and *mezcal* (a fiery liquor made from the maguey plant), our position began to grow embarrassing. The Indians became familiar, and wanted to examine our guns and our trappings. One fellow insisted on taking Morphy's rifle and strutting about the camp with it at a carry-arms in imitation of the soldiers whom they hate. They tried to embrace us and kiss us, and became so altogether free and easy that I began to feel uneasy. We had made several efforts to go, but were almost forcibly detained. I could see that Morphy was getting a little angry, and knowing well his volcanic disposition, I was afraid he would knock over some frisky devil who wanted to hug him, and thus precipitate a contest. Although well armed, we knew we would stand very little chance in case of trouble, as there were two hundred of them and we were hemmed in by the water on either side. They had arms enough themselves, that we could plainly see; and as the riot proceeded it became evident that several Indians in the crowd were disposed to give us trouble. We could hear the words *gringo* and *Americano* used in a contemptuous manner, and the familiarity of some of them began to develop into insolence. How to get away without trouble was now the serious question. We were told that we could not go, that we must stay all night, and it is difficult to say how the matter would have ended but for a fortunate incident which diverted the attention of the camp and enabled us to make a start.

Two drunken dancers got into a fight down the causeway about a hundred yards from us, and the whole town rushed down to witness the fun. Taking advantage of the momentary diversion, Morphy and I, with our boy Jose, seized our traps and moved rapidly off in the opposite direction. We had placed a quarter of a mile between ourselves and the village before our departure was noticed, and then a wild cry went up, and the entire crowd came charging down the causeway, pell-mell, directly for us. A canoe lay on the bank before us. Hastily pushing it into the water we stepped in and paddled it over to the other side of the canal. This saved us from being overwhelmed. All the other boats were back at the village, and so the crowd was brought to a halt upon the bank opposite to us, whooping and yelling like the veritable savages which they were. At least half a dozen sprang into the water, however, and swam over to our side. We had stopped here, and Morphy now mounted a little mud mound and addressed the crowd across the water. I had never known before how much of a diplomat Morphy could be. He addressed them as *paisanos* (countrymen); told them that we appreciated their kindness and hospitality, and that we would certainly come to see them again next week, accompanied by our "sisters and our cousins and our aunts." We were delighted with our treatment at their hands, and loved the Mexican Indians above all

things else, especially when they were on a little "tear." We regretted that it was necessary for us to tear ourselves away, but we had a pressing engagement to be in Chalco that night, and necessity compelled the sacrifice. He was proceeding in this style at some length when I called his attention to the fact that the black rascals were swimming over to us one by one, and that if he did not cut it short we would soon have the whole menagerie at our heels again. Morphy acquiesced, and throwing a handful of small coins to the Indians who had reached our bank, we marched off down the causeway and left them scrambling for the lucre. Fearing that we might be followed, we kept up a brisk pace which carried us rapidly away from the village, and to our great satisfaction its cries and wild noises gradually died away behind us.

For two hours we pushed steadily ahead, threading our way through swamps, and cautiously passing along narrow and uncertain causeways. The outlet to the labyrinth we were following was a mystery none of us knew; and as the huts which we passed were all deserted, the inhabitants having gone to the fandango, we could not find out. To add to our discomfiture it began to rain in torrents and the night was rapidly advancing upon us. The prospect seemed good for an all night berth in the swamps, and we were beginning to look about for a comfortable spot, if such might be, when a sound of oars attracted our attention, and presently a canoe hove in sight through the tall tules directly ahead of us. It was manned by two young Indians. We hailed them and they stopped. Would they take us to Chalco in their canoe? No. We offered them two dollars—an enormous price. No; they were going to the fandango. Three dollars. No; money was no object. This was too much. Morphy was boiling over with wrath. With a choice Spanish oath he sprang to the edge of the causeway and bringing his rifle to his shoulder ordered them to pull their canoe alongside the bank. They protested, but there was danger in his glance, and the Indians were compelled to yield. Sulkily pushing their boat to the bank we all got in. Our impressed crew was now ordered to pull for the town of Chalco, and to this order was appended a fearful threat respecting the dire consequences of playing us false. Seeing that resistance was useless, and knowing that they would be well paid, the Indians soon recovered their good humor, and our canoe sped rapidly down through the swamps and the rain, and two hours later we were landed on the outskirts of the village of Chalco. Bidding good-bye to our dusky guides and wishing them a *bon voyage* back through the dismal swamps, we turned our faces towards the town. It was dark as Erebus and the rain still continued; but Chalco was a pretentious place and had a hotel, which we finally found, and our immediate troubles were at an end. I shall not tell you anything about this hotel or the strange guests we found there, for it would necessitate another chapter in the HORTICULTURIST. It is sufficient to know that it was a "funny" place, and kept us interested. Next day we took the stage coach, and night found us once more in the City of Mexico. "O, Mexico," Morphy apostrophized, as we rattled down its beautiful streets and past its stately palaces, "who would dream, while gazing on thy marble front, that Cathay is just beyond thy walls!" And Jose and I said "Amen.'

Pick out weeds on the lawn.

NEW ZEALAND SKETCHES.

By Mrs C. S. Bracey, of "The Willows," Wellington, New Zealand.

I often think how much enjoyment people who have always lived in towns lose away from the bright open country, noble trees, shady lanes with their hedges, covered with the wild sweet honeysuckle, clematis, and dog roses in summer; and during the spring, banks overspread with primroses, cowslips, white and blue violets, arums, and other delicate flowers, while in the woods the lovely wood-anemone, blue hyacinth, early purple orchis, wild strawberry, and many others, too numerous to name, but each adding an additional charm; but beautiful as this all is, one finds it is chiefly found in a country long civilized, and where every acre of ground has been worked and planned for. To know nature in its wild uncultivated state you must visit a new land, such as New Zealand, where in many parts there are no roads, no shady lanes like those I have mentioned, but large forests, mountain ranges, rapid rivers, deep ravines, and fern-clad gullies, with sides so precipitous that a horse in coming down them slips almost as much as he walks. It is a day in this country I am going to describe.

A large party of us were staying in a house surrounded by forests, and a few fields laid down in grass. A short distance from this open homestead a native run (pasture) had been hired by the owner of this property, and many horses and cattle were kept upon it. Some fat cattle had been brought in a few days previous for sale, but during the night they had broken down some of the rails in the stock yard, and escaped, joining it was supposed the other cattle on the run, so it was decided that we would go on horesback to get these cattle back. Crossing first a narrow river bordered by a steep bank, we reached the run, but no cattle were to be seen, and we divided our party. I went with three others, the rest of the party with two cattle dogs left for another part of the run. We first proceeded to a patch of Manuka scrub. It grew high above our heads, and was no easy matter to penetrate; sometimes you get in a little way and have to back your horse out. We found nothing here, so scrambled up a high bank to an upper platform of ground covered with fern (Pteris esculenta, the rhizomes of which were formerly cooked and eaten by the Maoris). Here one of my companions and his horse tumbled into an old Maori oven, but with a little assistance got out again. On our left was the main forest, but to enter it we had to cross a boggy creek. Here one of the party and his horse got bogged, and it took some time before the horse could be pulled out, and it then appeared so injured that he had to start home leading the poor animal, and another of the party returned with him, leaving two of of us to continue the search.

The trees in this forest are magnificent, for beyond the track already mentioned this forest has been untouched by an axe, and stands in its natural beauty and luxuriance, Cyathea dealbata (the silver fern), Cyathea medullaris(the black fern), and Cyathea Cunninghamii, lifting their magnificent fronds in close proximity. Further on were exquisite specimens of Areca sapida (the Nekau'palm), whose delicate shoots are eaten by European and Maori, to the destruction of these elegant trees. Trunks of the larger trees were completely enveloped with Metrosideros albiflora, large trailing branches of Clematis indivisa, then in seed, with its beautiful feathery bunches of seed heads, almost as lovely as its star-like

flowers, hung from tree to tree. Plants of Loranthus Colensoi, one of the mistletoes, had found a home on a Metrosideros tomentosa, Passiflora tetrandra covered with orange-colored berries climbed over a decayed tree hiding its dead trunk and branches with a thick covering of shining green foliage and bright berries, the ground was carpeted with ferns of varied kinds, and moss. The delicate pretty Fantail (Rhipidiera flabellifera) was flying from tree to tree, and on the branches of a Podocarpus totara a pair of Tuis (Prosthemadera Novae Zealandiae) were making their strange gamut of notes, so different from any other birds, while sometimes the soft note of the wild pigeon broke the silence. Fallen trees often impeded our progress, and we had to go round them if they were too large to jump our horses over, but we saw no cattle, and at last coming to a perfect thicket of Rhipogonum scandens, we found it totally impassable. Strong leafless shoots had sprung in all directions from the ground, twisting in and out a perfect network, twining everywhere, leafless until they caught the huge branches of the neighboring trees, and then hanging down with glossy leaves and large bunches of crimson berries. Without an axe to cut a way it was impossible to pass, and we thought it best to return.

We skirted the edge of the forest. Large bushes of Fuchsia excorticata, with a quantity of its sweet fruit then ripe, and its paper-like bark hanging in strips; small trees of Edwardsia grandiflora, Pittosporums, Veronicas, and Aristotelias made up the forest. We crossed another creek, and reached the foot of a huge hill, climbing up which we had a lovely view of ranges of mountains, and high forest trees. Turning inland we met with high bunches of Toi toi (Arundo conspicua). Its high reed-like culms and feathery flower heads were eight feet tall. Phormium tenax here had leaves six feet long, thick, and coriaceous. The Cordyline Australis has a curious head of narrow leaves two feet long and one and a half inches wide, and flower heads covered with small white berries. Many different sedges, plants of Libertra ixioides with its long yellow seed capsules, roots of Hierochloe redolens, as sweet-scented as the Anthoxanthum odoratum (the English vernal grass), and eagerly sought for by cattle, were in abundance here.

Now we perceived marks of cattle, but so trampled that they were no guide, and we began to despair. We therefore turned our horses homeward. When about half way down the hill I thought I saw cattle in the clearing we had before visited. It became necessary to make a detour to avoid their seeing us, and to approach them from behind. Now came an anxious time, for with other wild cattle we saw those that had escaped from the stock yard; slowly we drew near them, knowing our best chance was to start for leaders, the cattle that had not before been brought in. We quietly cut them off from the forest, and they started without trouble. But there was a creek before us, and if the cattle then separated our chance of getting them would be lost. A leap and we were over, the cattle keeping together and getting nearer home. Those that had been in before tried to break away. At length we reached the river, a cut from my companion's stock whip sent the leading bullock in, we hurried the rest after him, and they rushed up the steep bank leading into the paddocks. We obtained helpers, and after much galloping, shouting, whip cracking, and dogs barking, the cattle were safely got into the stock yard. We were highly gratified at having per-

formed a feat worthy of a good stockman, rather to the chagrin of the rest of the party, who had returned empty handed. Only those who have enjoyed a day of cattle bringing can realize the excitement this amusement produces. In a new colony these cattle hunts are the greatest excitement any one can enter into. My experience is poor in comparison to that of stockmen on the unbroken runs, who enter further into the interior, and encounter forest, creeks, ravines, and rivers, often having to camp at night with cattle, who frequently take that opportunity to escape.

CULTIVATION OF FLOWERS FOR THEIR PERFUMES.

Read before the California State Horticultural Society, July 30th, by G. P. Rixford.

We can not imagine a more delightful and at the same time a more profitable branch of horticulture than the cultivation of flowers for their perfumes. That the climate of a large portion of California is perfectly adapted to the growth of the principal varieties used by perfumers there can be little doubt. This industry has long been an important one in Southern France, where the climate is similar to ours, while an experienced Frenchman, Dr. Piesse, of the noted firm of Piesse & Lubin, perfumers, has just expressed a favorable opinion of the probable success of flower farming in South Australia. The climate of both these countries is so similar to that of this State it is safe to assume that the culture would be successful at least in our warmer valleys.

The amount of capital required is very moderate, and one great advantage is that the whole process of growing the flowers and extracting their essential oils is simple, and can be wholly completed by each grower either on a large or a small scale. The products of the flower field may be put in a form so concentrated and valuable that distance from market is of little consequence. The investment of large capital in great establishments for distilling the flowers, as in France, is not necessary, since in Turkey along the southern slope of the Balkan Mountains, where a large quantity of the otto of roses is made, each farmer does the distilling for himself, the apparatus for which is very simple, and often of his own construction. Small stills can be purchased here for fifteen or twenty dollars, which will answer every purpose of the small cultivator. Without entering into the details of distilling the flowers we give the methods of cultivation adopted in France, translating from *Cours d' Arboriculture*, a work by A. Du Breuil, recently published in Paris.

The cultivation of plants for their perfumes is confined to the most southern departments of France, near the borders of the Mediterranean. Those chiefly grown for the purpose are the bigarade orange, rose, Spanish jasmine, and cassia.

We will first consider the orange. Orange flowers in the hands of the perfumer constitute one of the principal sources of his industry. From them are obtained the orange flower water made use of both in perfumery and in medicine.

In Southern France (the departments of the Var and Alpes-Maritimes) the harvest of flowers of both the common and the bigarade orange commences in the month of May and continues into June, and it is not unusual to see it renewed in autumn; but the autumnal blooming occurs only after a very dry summer, when with the commencement of the rainy season the trees put forth a new growth, and blossom again, though this second flowering is much

less abundant than the first. Experience has demonstrated that the flowers of trees grown upon hills are richer in essential oil than those of trees upon the rich, deep soil of the valley or plain.

The flowers are gathered by extending cloths under the trees after the sun has dried off the dew, when vigorous shaking brings them down. This operation is repeated every two days during the blossoming period. Care must be taken to avoid gathering the flowers immediately after a rain, or before the sun has entirely dried off the dew, otherwise the trees will suffer from the operation, and the flowers will lose their aroma and be spoiled by fermentation. To obtain the sweetest and most delicate perfume, the flowers should be gathered when ready to expand. At that time they contain the greatest quantity of essential oil. Notwithstanding this harvest of flowers, there always remains a sufficient number upon the trees to give a crop of fruit. Orange trees begin to bloom and produce fruit at the age of five years, and are productive for about forty years. For this time a bigarade tree produces at least forty kilogrammes (84 pounds) of flowers each year.

Also of great importance is the rose, several varieties being cultivated, from the flowers of which the essence is extracted. In the vicinity of Cannes, Grasse, and Antibes, the *rosier des quatre saisons* (Damask rose), *rosier de mai*, or *rosier de tous les mois*, is chosen as giving the strongest perfume. The bushes are planted upon land which is not susceptible of irrigation, but which receives a thorough cultivation previous to setting them out. The rose bush is propagated by means of cuttings and suckers. The plants are set in rows three feet apart and at intervals of nine inches in the row. During the summer they receive several workings to destroy the weeds and to preserve the moisture in the soil.

During the following spring dead and languishing wood is cut away and the vigorous shoots are bent over and fastened to the tops of the shorter canes. They are manured and cultivated and the soil is stirred several times during the summer, the same culture being repeated each season.

The harvest commences the second spring after planting, and the plantation reaches an average productiveness about the third season. The gathering takes place from the beginning of April to about the middle of May. There is usually a second blossoming in autumn, but the flowers are much less abundant and possess much less perfume.

Eight bushes of average productiveness give one kilogramme (about 2½ pounds) of flowers. As 40,000 bushes are planted on one hectare of land it follows that the crop is 5,000 kilogrammes of flowers per hectare, which at the usual price of 50 centimes per kilogramme give a product of about $366 per acre.

The Spanish Jasmine (Jasminum grandiflorum) came originally from India. It is remarkable for its large white flowers which are purplish without. At the north it is cultivated in conservatories for ornament, but in the vicinity of Cannes, Grasse, and Antibes, it is an object of quite extensive field culture for its flowers, which are eagerly sought after by the perfumers. The following are the principal points in its cultivation as practiced in the vicinity of Cannes:

For the plantation a rich, strong soil, susceptible of irrigation, is selected. The plant is propagated by grafting upon the common jasmine (Jasminum officinale) which is grown from layers

and cuttings. The ground is manured and thoroughly worked, and the plants are set in rows two feet apart and at intervals of four inches in the row. The planting is done in the fall, and the ground receives a thorough cultivation in the spring, and is irrigated several times during the summer.

The following spring, that is when the young plants are one year old, they are cleft grafted near the ground. The soil is again abundantly manured and thoroughly worked, and the surface is left in a form to facilitate irrigation. A trellis about two and a half feet high, made of canes, is placed along each row to which the shoots from the grafts, which develop rapidly, are to be fastened. In addition, the plants should be watered every two days from the commencement of May to the middle of October.

At the approach of winter earth is thrown against the rows of plants sufficiently to thoroughly protect the base of the graft from freezing. In spring all the shoots above the earth and unprotected will be found killed by the frost. The dead shoots are all to be cut away as near as possible to the point of insertion of the graft. The trellises are to be re-established, the ground is to be manured and cultivated, and the surface left in the best form for irrigation, as previously described, and the plantation is to receive the same treatment each year.

The harvest begins the first season that the grafts are inserted. It commences in September and extends into November, after which the flowers do not contain sufficient perfume to pay for gathering. The flowers are delivered to the perfumers as soon as possible after picking, as they rapidly lose their odor. The average product is forty kilogrammes of flowers for 1,050 plants, or in the neighborhood of 6,640 kilogrammes per hectare, which at 2 fr. 25c. per kilogramme gives a value of 14,940 fr. per hectare, or about $1,112 per acre.

The usual duration of a plantation of Spanish jasmine is ten years. About that time the roots of the plants are attacked rapidly by rot. Experience has shown that the ground should be cultivated for at least four years with other crops before being again planted with jasmine.

Another perfume plant of note is the Farnese cassia, or cassia of the Levant, Acacia Farnesiana, a shrub with pinnate leaves, originally from India, which grows to a height of sixteen feet. Its spiney branches are covered towards the end of summer with little fragrant yellow flowers in dense heads. At the north it is grown in the conservatories, while in the warmest parts of Southern France it is cultivated in the open air for its flowers, which play an important part in the perfumer's art.

Cassia is propagated in spring from seeds, the covering of which is so hard and impermeable to moisture that they would be several months in germinating if committed to the soil entire. In order to facilitate their growth they are cut or worn away upon the side by rubbing, after which they are soaked until swollen, which ordinarily takes place at the end of two days. They are sown in nursery rows in well pulverized soil. Germination takes place immediately, and the growth is so rapid that the young plants soon acquire the length of the finger; when they are fit for the permanent plantation.

The soil selected for the plantation is usually a mica schist, dry or well drained, and sheltered on the north. Previous to planting, which takes place in spring, the ground is deeply and thoroughly worked. Autumn planting

does not succeed for the reason that the roots rot during winter, and because the young plants, by reason of their removal, are more exposed to frosts and are less able to endure them. The plants are put out in quincunx order at distances of two metres or six and a half feet. They are immediately cut back to a height of two inches above the ground and are then irrigated.

During the growth of the plants four or five shoots, which are to form the framework of the head and should take the form of a goblet, are allowed to grow. The plants are again irrigated towards the end of May. The following year, in March, the four or five shoots which were allowed to grow the previous season are cut back to a length of about fifteen inches. The ground is manured and thoroughly cultivated.

Towards the end of May the second year the buds are nipped, reserving three at the summit of each shoot, one on each side, and one at the top, making when grown twelve or fifteen branches or twigs to each plant, from which the flowers are to be gathered. During the following spring the branches which produced the flowers during the summer are cut quite down to the base and a single new flowering shoot is allowed to grow in its place. The same operation is repeated each year, as well as the irrigation at the end of May, and a thorough cultivation and manuring in spring after the pruning.

The gathering of the flowers commences at the beginning of September and lasts about two months. The product is delivered fresh to the perfumers; the flowers, however, retain all their aroma and a great part of their value after they are dried. The cassia furnishes a crop of flowers during the first year after planting, but the plants do not reach their full capacity (1 kilog. of fresh flowers) until the fifth year. The ordinary price is five francs per kilogramme or forty cents per pound. A hectare contains about 5,000 plants and gives a revenue of about 25.000 francs or at the rate of about $1,500 per acre. The plantations live to be very old, frequently being vigorous and productive at the age of fifty years.

THE PEACH AND ITS CULTURE.

Read before the State Horticultural Society, July 30th, by DR. J. STRENTZEL, of Contra Costa Co.

One of the most abundant and luscious fruits grown in Asiatic countries, introduced by the Romans into Europe, did not find a congenial locality for its propagation, apparently losing stamina. Transplanted to this continent it spread rapidly, and is now one of the most extensively cultivated and popular orchard fruits.

A denizen of another hemisphere, it can not be otherwise but that the tree may have suffered by coming in contact with varied climatic conditions of soil and culture, which shows itself distinctly in older cultivated settlements, where the soil is beginning to lack the elements of fertility required for the growth of the tree. Thus through the extent of the Southern States, the peach suffers from the yellows—an acknowledged contagious disease produced by a fungus of the genus Nacmospera, inducted by the lack of alkali in the soil, and subject to amendment by its replenishment. In the Eastern States the curled leaf and white mildew are prevalent, and in both regions the peach root borer destroys many trees.

In California, previous to the year 1850, a few peach trees were found about the Missions and around Los Angeles, the fruit of small size, white or yellow, globular, with a deep suture, the trees badly affected with curled

leaf. Later, when budded imported trees began to be plenty, their vigorous growth and luxuriaut foliage were characteristics distinguishing them from the so-called Mission peach. A few years later the curl began to appear also on budded trees. Eight years ago the white mildew was recognized spreading along the Sacramento River. The Dolly Varden style of peach is now the rule through the central part of California. By slow degrees it has progressed in evil until now an almost total failure of the peach causes us to meet to-day and anxiously concert for the better. A fond hope is cherished by some that the present is an exceptional season; that in future the trees will recover their former luxuriance, and the fruit its lusciousness and beauty; in some measure these anticipations may be realized, but, judging from analogy, we are apt to be disappointed. The enemies of the fruit-grower multiply; the tent and green caterpillars, the codling moth, the pear bug, several varieties of borers and pear-eaters, and numerous Cocci and Aptridis, the most troublesome of them, the wooly aphis on the apple tree, and the phylloxera on the vine—no telling when the curculio will show —admonish us that constant vigilance can only guard our fruit from spoliation. All these insects are now actively at work in our midst, requiring co-operative action to combat them under the ægis of society through its government, by the employment of specialists and experts, to search the ways of these pests, and ascertain the most feasible means of their destruction. Much in that line has been already done by the efforts of the Department of Agriculture in Washington; a great deal more than credit is given for. Its Entomologist and Microscopist have done considerable work, and it is desirable that these researches be continued, and their reports distributed in a manner to insure their reaching parties interested in agriculture, and anxious for information upon those vital subjects.

Troublesome and hard to conquer as the army of insect depredators may be, there are others still more insiduous in their approach. Favored by the elements, they spread with lightning speed to the destruction of higher organized plant-life. They are the class of Cryptogamic parasitic plants embraced under the name of mildew and fungi. Their seed or spores may remain suspended in air, water, or earth, for an indefinite length of time, until favorable conditions or presence of a pabulum call them to life and indefinite multiplication.

Under our consideration are now the curled leaf and the white mildew on the peach. It appears superfluous to describe their appearance, habitat, and way of living—they are before you. The denuded, debilitated fruit-barren trees tell the story. The connection between cold, rainy spring weather and prevalence of curled leaf appears to be established. In such years the superabundance of sap furnished to the leaves, for want of warmth and sunshine remains in a crude state, a condition favorable to the sprouting of spores. The irrigation produced by the entry of radicles in the cellular tissue of the leaf causes an augmented flow of crude sap and consequent disorganization of the whole structure, to the detriment of the fruit, which being starved, drops off. Again, during warm, dry weather, if some curled leaf appear, it affects only a part of a leaf, which soon dries up. New growth is brought forward to supply the wants of the fruit of the tree. There is also apparent a constitutional peculiarity and difference in

the structure of the leaf in some varieties, which enables them to resist the encroachments of the parasite. These constitute the non-curling varieties, although in exceptionally unfavorable seasons like the present, they partially submit, but they are apt to recover sooner. This peculiarity is taken advantage of in selecting them for orchard culture, or to raise seedlings for budding. Fortunately we can go a step farther by using a near relation of the peach which is more robust and healthier, free from curled leaf under any conditions, viz: the sweet hard-shell almond. It should have our preference for stock plants, and it is used for that purpose abroad.

The white mildew takes lodgment near and on top of the shoots, often spreading over the leaves, and is a disgusting, leprous blotch on the fruit, some varieties resisting the attacks more or less, but none are entirely exempt. The shortening of the affected shoots would be of some service, and still better results may be anticipated from alkaline and sulphur washes. Between them a solution of blue-stone recommends itself most forcibly, owing to its low price, facility of application, and being effectual in destroying fungi and their spores. Heretofore, the low price of fruit left us no means to experiment with. The want of time, still more grievous, was an obstacle to following this kind of research by individual horticulturists. It is a legitimate field for experimenting by our agricultural colleges, experimental farms, and national gardens in Washington. The bouquets of knowledge thus raised would be some offset for the many thousands squandered for mere ornamentation. But such good time is hardly to be expected, and individual effort by public spirited members of this society must continue to strive to do the good work—to clear off the leprous spots from the delicious peach—to return the tree to its pristine luxuriance and fruitfulness.

BRIEF HORTICULTURAL NOTES.

Chloride of lime kills insects.

Clip and train your young and growing hedges.

Phlox sublata is propagated by dividing the roots.

Cocoa fibre well rotted is most excellent to grow cuttings in.

Persistent trapping of slugs with small piles of bran will keep them under control.

Variegated thyme is a good plant for vases and baskets. Burnet is a good edging plant.

Keep cutting ornamental grasses and everlastings, and hang them in a dark room to dry.

Poor growing and rare sorts of carnations may be grafted on the roots of Saponaria officinalis.

Kill noxious insects, slugs and grubs. Fight moles, gophers and squirrels, all these are ceaseless enemies of the garden.

The varieties of Funkia are fine plants for a cool green-house, making useful specimens for decorative purposes.

Nelumbo Nucifera, the sacred bean or lotos, will grow in the open air here. It is one of the choicest of aquatic plants.

Soot is one of the best of fertilizers for pot-plants. Tie a pound of soot in a cloth and let it soak in the water used for watering.

Two pounds of soft soap mixed with eight gallons of water and heated will kill the red spider on pot plants if applied to the leaves.

Yellow roses are rendered of deeper color by the use of lime and ashes; soot and iron rust deepens the color of red and crimson roses.

Two teaspoonsful of carbolic acid, mixed in three or four gallons of water, gives a liquid which, when sprinkled over rose bushes, destroys insect pests.

Darlingtonia Californica, the California Pitcher Plant, was hardy last winter on rockeries, in England, exposed to a temperature of six degrees below zero.

Dahlias and late Gladioli need staking. Asters, Chrysanthemums, and autumn flowers require to have extra shoots pruned, and the plants well staked.

It is really time, in the coast counties, to begin to prepare for winter flowering plants, to sow seeds of annuals and see that the violets have good care, so as to bloom early.

Cut flowers for exhibition purposes in the morning. So many fairs are now in progress that even the most modest gardener ought to be tempted to try a display.

Moss, such as Eastern nurserymen pack plants in, if dried and rubbed up with dust, then mixed with sand, is a very successful medium in which to root cuttings of all kinds.

At Cambridge, England, a youth, eighteen years old, was recently sentenced to three months' imprisonment, with hard labor, for entering a garden and stealing a sprig of geranium and a rose-bud.

Save the small bulbs in the axils of the leaves of certain kinds of lilies, such as L. lancifolium rubrum. If sown in a garden bed next winter they will soon make flowering bulbs. It is by far the cheapest way.

The new hybrid tea roses, such as President, Beauty of Stapleford, Duke of Connaught, George Bancroft, Michael Saunders, and Pearl, are said to mark a great advance, and indeed to form an entirely new class of roses.

Plants look well on brackets in the hall-way. There is one style of bracket, made with a hollow, into which the pot can be set so as to be nearly out of sight. These are much the best for upright plants. Among ferns the Aspleniums are well adapted for brackets.

There are several kinds of flowers which should not be allowed in gardens when children play. Arum berries have proved fatal when eaten, as also have species of Aconite, both leaves and root. Monkshood is also dangerous, and Ampelopsis leaves are said to have killed children.

Hanging-basket notes are always in order. For large baskets mixed foliage plants, such as Dracæna, Begonias, Centaureas, etc., appear well. We have seen a square box of wood lined with tin hung in the bay-window by four wires, up which vines were trained. Give plants plenty of water at this season.

For pot-plants in the room avoid plants which have been taken directly from a hot-house. Conceal the pots by rustic covers. There is another way of doing this. Take fern leaves, and insert the stems into the soil of the pot close to the rim. Then break the fronds so that they droop over the edge and hide the pot.

BRIEF AGRICULTURAL NOTES.

Hay this year is of superior quality everywhere.

C. F. Reed, of Yolo, will harvest 60,000 sacks of wheat this year.

Rabbits have destroyed a large percentage of the Lompoc bean crop.

Dark stables are an abomination and produce diseases of the eyes in horses.

The Calloway irrigation canal, Kern, renders 400 square miles of land fit for use.

Upper Shasta has a short wheat crop, Southern Shasta and the Redding grant a large crop.

Wild sunflower is a pestiferous weed in Fresno County along some of the irrigation canals.

Odessa, White Russian, and Defiance wheats are said to have given a good account of themselves this year.

Vegetables are kept fresh by wrapping them in coarse brown paper which is damp, and then placed in a cool, dark place.

Threshing is nearly over in the San Joaquin, and has hardly begun in some of the cool coast valleys of the northwest counties.

Paint the handles of trowels, pruning knives, and other small tools, of a bright red, so that if lost in the grass they can more easily be found.

The wheat crop of the State is turning out magnificently. It is thought that we shall have more to export than in any previous season.

Keep a good look-out for fire at this season. The dry foxtail grass on the road-sides will burn like powder. A match, a cigar stump, or a spark from a careless hunter's camp-fire, might do much injury.

Healdsburg sheep have many of them died from the hive worm, known also as flukes. The remedy is common salt as much as the animal will eat, and as often as possible.

Manures applied to soils are of use in three ways: First, by improving the physical condition of the soil; second, by acting as solvents; and third, by directly feeding the plants.

Healdsburg hops are ripe. There are 52 acres near the town, and they will yield ten to twelve tons to the acre. Prices will be remunerative, and people who dug up their hop yards a few years ago are sorry for it now.

The modern and progressive threshers have an attachment consisting of a kitchen and dining-room on wheels with canvas covers. This renders it unnecessary for farmers to board the harvest hands and is welcomed by the farmers' wives.

BRIEF POMOLOGICAL NOTES.

A gentleman in Carpenteria has 1,500 trees of the Petite Prune d'Agen.

Owners of small fruit farms want a cheap portable machine which will not cost over $50.

Peaches are a poor crop in the sand hills of Northern Monterey, many trees appearing dead.

In Santa Barbara walnut trees, 10 years old, are yielding from 50 to 100 pounds of nuts per tree.

The Alexander peach is much liked as an early variety in Santa Rosa. St. John's is the earliest and best of the yellow peaches.

Several leading horticulturists have

organized an association of orchardists in San Jose. They are studying the the scale-bug pest.

Pick pears before they are ripe, and put away to ripen. The seeds must be hard and somewhat brown before the pears are fit to pick. Bartlett and Winter Nelis pears will be high priced this year.

Apples can be shipped a long distance if proper care in packing is used. The London Magazine of Pharmacy says that apples that are wrapped in tissue paper dipped in a solution of salicylic acid can be carried around the world.

An orchardist at Lugonia, San Bernardino Co., gives a long list of peaches which he is testing. Alexander beat Waterloo in time of ripening. They are said to have a nectarine in that vicinity which bears full crops, and is of good quality. Its name is as yet unknown, and it may prove a seedling.

GARDEN NOTES FOR AUGUST.

It really does seem as if there were more plants about the homes of the middle classes now than ever in any previous season ; more hanging-baskets on the porch, more beauty and grace in the suburban atmosphere of our beloved State. Not long ago we noticed some good rustic vases for the lawn made out of sections of hollow oak, with the rough bark left on, nailed on the top of posts, so as to be several feet above the ground. The hollows were filled with rich earth in which vines were planted, and these trailed over in a very graceful way. Another method of which we have heard, consists in taking a half barrel or tub for the basis. Strips of rough bark are nailed up and down on the outside and the ends of these strips are notched or scolloped in any desired way. This tub is then placed on a low pedestal, over which vines planted at the base may be trained. In the tub itself some tall and stately plant should serve as the centre piece, and others of a more drooping habit may be around the verge. The following list is recommended : for the centre a Dracæna, a yellow-edged Agave, or a Yucca ; around this three scarlet geraniums may be planted at regular intervals ; then we may have a circle of the lovely Nierembergia gracilis, or of blue Lobelias ; outside of all golden honeywort, Tradescantia or white Maurandya may complete the picture.

In dry weather water should be applied in the afternoon and evening. Really enthusiastic gardeners would rather use water late at night, and even until bed time on moonlight nights than be guilty of applying water in the morning when it quickly evaporates, leaving the surface hard. There are traditions in the family of a horticultural friend that a certain honored member recently arose, in the "wee sma' hours of the night," and went out to put on the garden hose and sprinkle his Turkish Squash, his Scarlet-flesh Muskmelons, and his hill of Cuzco Corn. Though tradition on this point may be slightly inaccurate, it is, at least, the sort of thing he is liable to do at any time.

Ribbon and other showy beds begin by this season to look rather past then best, but if the branches are well pinched back, and water used whenever needed, they will hold out wonderfully even in these sultry days. Keep down the weeds by a free use of the hoe, and stir the soil deeply. Of this last nothing else can take the place. Flowers soon droop if the surface is allowed to become hard after watering. In the warm valleys the Coleus are magnifi-

cent bedders at this season, but they fail utterly in the climate near the bay of San Francisco. Achyranthus Emersonii is said to be a great improvement on the older kinds. Large plants for masses, such as Hollyhocks, Cannas, Wigandias, and Ricinuses, are very effective. They look particularly well when grown in clumps, among large trees.

California needs more aquatic gardens, in which the loveliest of water plants may be at home. Lily ponds are the type. Then, as we begin to consider the subject, how the list widens! There are plants wholly aquatic, with leaves which float and flowers which sway; there are reeds and grasses, and countless others to group in shallower water. We may have Egyptian lotos and the classic papyrus plants, if we will; fountains, rockwork, winding paths, silver streams, singing as they move gently down the quiet lakes, where lilies float, and summer-haunted isles are sweet with murmurous bees, and rustic bridges on which we may rest, and, looking down, see the evanescent sparkle of minnows' silver sides —these are the sylvan charms which I wish we might possess wherever there are streams and toiling men. Let us live with the beauty of Nature's wild gardens until her method become ours also.

The true method of farming with success in California consists in rotating crops, as alfalfa followed by peas, beans, and hay, followed by wheat, beets, and potatoes, followed again by flax, tobacco, hemp, hops, and other most exhaustive crops. Then return to alfalfa and grass. Raise good cattle. Alternate pasture and tilled crops. Fallow some fields. Plow under green crops occasionally to enrich the land.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

MY UNIQUE BULB GARDEN.

EDITOR HORTICULTURIST: It is a little one, six feet by four, but it has been a thing of beauty for the past six months. As usual with my bulb beds, it was excavated in a cool hill-side, facing northward, and shaded by ferns and brambles; it was then well floored with rock and sided up with old tin, and a few inches of soil thrown back in. I then put in a lot of mixed Japan lilies and native lilies, and more dirt; then an assortment of Dutch bulbs, and more dirt; then an assortment of native bulbs, a few more of the shallower growing Dutch bulbs and filled five or six inches more of dirt. Now for the result from January till May. I had Dutch bulbs in their order—Crocus, Narcissus, Crown Imperials, Tulips, Hyacinths, etc.; then came Calochortus pulchella, Brodiæa coccinea, C. cerulea, C. alba, Brodiæa (Tritelia) laxa, and Washington and Parvum lilies. Brodiæa coccinea is just closing its career and going to seed. I shall not disturb the bed for planting later blooming plants, considering that the bulbs should have full time for ripening to repay them for their long season of bloom. Another bed near by is now bright with L. pardilinum, L. Parryi, and L. maritimum.

J. B. H.

FARMERS' FRIENDS.

EDITOR HORTICULTURIST: Game birds are protected throughout the State for the benefit of sportsmen, though in many instances both birds and hunters

seriously annoy farmers. Quails are particularly bad about gardens, burrowing in the mellow soil and eating the tender leaves of young plants as well as ripe fruits. There are, however, a number of animals and birds made game of by boys, other amateurs, and even farmers themselves, that should be protected, viz.: hawks, cranes, badgers, gopher snakes, and weasels. Cranes and weasels are particularly destructive on gophers and field mice; hawks and badgers do more to keep down our squirrel nuisance than any thing else, and the gopher snake goes for the gopher to the extent of his capacity. The writer recently noticed near Gilroy upward of one hundred cranes in an alfalfa field, and while passing, five of them caught gophers and flew across the road so close that their prey was easily recognized.

P. S. Since writing this note I noticed a crane fly to a lagoon with a gopher in his bill, and then proceed to drown the gopher by holding him under until life was extinct.

J. B. Hickman.

San Juan, July 16th.

BLOOMING SANTA BARBARA.

A correspondent at Santa Barbara, under date of July 27th, gives us the following glimpse of affairs in that region:

"The crops are as fine as possible. I wonder if you ever saw 'a boundless contiguity of beans.' If you were here you could never respond in the negative again. Lima beans in bloom remind one of nothing so much as a midsummer snow storm. Corn is ambitious beyond precedent, and fruit all that we hoped for, if the cloudy weather does not mildew the grapes. The cannery is employing all the efficient workers that offer, and need fifteen more to avoid night work. They employ intelligent white labor—women and boys of fifteen years and over. The fires are not allowed to go out many nights. The season for apricots is about at its height, and will last, Mr. Dimmick thinks, about two weeks more. They are employing about fifty hands. I write of this, as I know you are interested, and the complications of the press provide no adequate method of communication with the outside world. Save us a nice little Santa Barbara corner in the Fair, if it is 'betwixt hay and grass,' as the old adage has it."

Editorial Department.

A LESSON FOR CALIFORNIA.

The Melbourne Acclimatization Society of Queensland made their fifteenth annual report recently, and it is printed in full in the *Queenslander* for May 29th. It is a remarkable showing for a young society, and ought to urge us to still stronger efforts in behalf of intelligent horticulture on this coast.

From the report it appears that the receipts last year were $4,775, and most of this has been spent for birds, animals, plants, garden work, etc., leaving a small cash balance for the current year. None of the officers are salaried except the secretary. The Legislature makes an appropriation each year for this society. Now let us see what has been done. They have now in bearing at Bowen Park the following valuable fruit trees: the Whampee (Cookia punctata), the Litchi (Nephelium Litchi), the Caramba (Averrhoa carambola), the Vi-apple (Spondias dulcis), two kinds of Wine Palm (Diplothemium maritimum), the Manila Tamarind (Inga dulcis), the Bael Fruit (Engle marmelos), and many others

which are chiefly valuable for ornamental purposes.

March 2d, the society gave a show in connection with the Sydney International Exhibition, at which they gave the public clear evidence of the importance of the work being done. We should be glad to print a list of the plants of commercial value which were shown, but space does not permit. It is sufficient to say that growing plants of the Custard Apples, the Sapodilla, the Algaroba, the Bread-fruits, the Cashew-nut, the Mohwah, whose flowers form food for men and animals, the Alligator pear, Pawpaw apple, and many other useful fruit trees of the tropic, semi-tropic, and temperate regions of the earth were shown. Many leading spice plants, medical trees and plants, timber trees, and indeed whatever is of economic importance to the human race, were included in this fine display.

The lesson of all this is too obvious to need any further word. It simply emphasizes the need of a botanic garden in this State, and the desirability that men shall be found who possess sufficient means to devote their leisure to such work, and sufficient love for horticulture to do so with joy and faith.

THE TIME OF FAIRS.

The season of agricultural and horticultural fairs is nigh at hand. Soon the ardent orchardist will go out and label with due exactitude his best fruit, and warn the members of his family that it must by no-manner of means be touched—it is to be a fit sacrifice at the altar of the Fair-god. But, oh keeper of orchards! we warn thee not to let an excess of zeal defeat its own aims. Years ago, we remember an orchard, one of the oldest in Alameda County, and upon an ancient pear tree near the house there was a graft of the Duchesse d'Angouleme pear, which bore three large pears that memorable season, and they were marked for exhibition purposes at the State Fair. The children were duly notified about it, and with overwise caution the head of the family stretched a shelter of white cloth on three sides, to break the force of the afternoon winds. That very night thieves came in the orchard, saw the white cloth ghostly in the moonlight, investigated the reason thereof, found the pears, and did feloniously pluck, take away, and to their own uses convert the two largest. Never since, though many summers have come and gone, has that discouraged tree produced pears of equal size; and doubts are abroad concerning the usefulness of white cloth shelters for prize fruits.

Candor compels us to admit that care in selecting and preserving the best specimens of field, orchard, and garden fruit is the most important item in making Fair preparations. The arts of packing them so that they arrive in good condition, and of arranging them so as to attract the eye of every passer-by, are of almost equal value. We have a very positive respect for those men who, in their own departments, make large and exhaustive exhibits, often at an expense which is much greater than the value of the premiums they may chance to take. But, in order to have a full display, it is also necessary that many persons show their best, though it is only one peach, one cluster of flowers, or one pot-plant. Each item helps to form an imposing whole.

At this, the time of fairs, we therefore urge the necessity of each farmer, fruit grower, viticulturist, apiarian, nurseryman, and stock raiser determining to do his individual share in helping forward these displays which do so much

to promote good fellowship among our people, and to extend abroad the knowledge of our abundant resources.

THE WEALTH WHICH IS A CURSE.

There are men in this rich and beautiful California who have made millions (not always honestly), and who during all these years have never known how to enjoy their gains. Having got money, they go on piling up more, and more, and more, spending large sums, often for outward shows, but all this time toiling like slaves, and finding none of the pure fountains of human happiness. There is in this State a man whose land, free from debts, is worth $200,000. He lives in a weather-beaten shanty in the midst of wheat fields. The barn-yard surrounds the house. There are absolutely no conveniences. The well is two hundred yards in one direction, and the wood pile two hundred yards in another. No fruit-tree or flower is in sight. Though he owns a number of cows, the monotonous breakfast, dinner, and supper bill of fare gyrates about pork, beans, and black coffee. After such a fashion has this man lived for many years, all the while acting as a highway robber to his land, cropping his broad acres year after year with wheat and barley, and restoring no element of fertility to the soil. The tract of land which, unfortunately for the world, this man owns, is wearing out fast. Some time hereafter, when his name hath drifted into irrecoverable obscurity, scientific agriculturists will be toiling for the restoration of these waste leagues. There will be trees planted, homes built, irrigation ditches dug, thriving communities founded. But, since the present owner has long ago crystallized into his evil ways, there is no discoverable remedy except haply the drastic medicine of a sheriff's hammer or the death-angel's quiet beckoning.

A neglect of precisely the same nature too often prevails on smaller farms. Too many ranchers appear as if camped out, in constant expectation of a move. They act as if they were aliens and enemies. They sneer at gardens, ignore the existence of trees, hate the sight of clean walks and newly painted fences around pleasant cottages. They insist upon living in dirt, confusion, monotony, and what would to a civilized creature be utter discomfort. If you enter their houses you will find that most of the family are crowded in one large room, utterly lacking the desirable sense of privacy ; the only signs of literature are a patent medicine almanac and a tattered copy of a sensational weekly. Yet these people own their land. If they farmed well they could surround themselves with the comforts of civilized existence and educate their children, whose stolid, old-looking faces, show that they are growing up in the same wretched system. Even as it is, the farm half tilled yields enough to insure many more pleasures. Gardens cost little to begin, and one's own labor and ingenuity count for much in obtaining home conveniences. But they know nothing about these things, and they never will. They do not live, they simply exist. The only good they do the world is that they pay some taxes and buy coffee, bacon, unrefined sugar, red and purple calicoes, tobacco and whisky (the last two being of doubtful utility). In all other respects the honest historian can not but pronounce them an unmitigated curse to the community; an alien and peculiar people, whose type we hope will some day become extinct.

Fresno raisin grapes will yield largely.

THE STATE HORTICULTURAL SOCIETY.

The July meeting of this society was well attended. Prof. Hilgard presided. Joseph Sexton, of Santa Barbara, sent up a box of apricots. He states that he had buds which grew 9½ feet from the ground in one year without irrigation. The variety was Blenheim. Six new members were elected. The committee on Botanical Gardens reported that the matter was progressing.

The subject of phylloxera was next taken up. J. S. Hyde, of Santa Rosa, had sent to Prof. Hilgard five winged phylloxera found on the roots of a vine taken from one of the Sonoma vineyards. The next day, July 26th, Mr. Hyde writes that he had found several more specimens with rudiments of wings, like little pads on their sides. He thought that they must have hatched in the glass since the previous day. Prof. Hilgard said that he had examined the insects. He said he held the opinion that the winged form was either not produced at all or in small numbers in this State, which would account for the slow spread of the phylloxera. The winged insect is chiefly dangerous on account of its ability to go from one locality to another. In Europe the winged insect is known to have gone forty miles at once. The phylloxera is thought to be propagated only by the creeping form, and not by the winged form. The specimens sent are of the infertile kind, and little danger is, therefore, to be appended from them.

Dr. Blaisdell, Secretary of the State Vinicultural Society, said the winged phylloxera is the same as that of Australia. He reprobated the practice of tearing up vines attacked by phylloxera and throwing them broadcast upon the ground, as the larvæ probably then develop wings. He suggested that the root be cut some eight or ten inches below the ground, and some muriatic acid be applied, which would kill the vine, when the top might be burned. There is no use trifling with the plague; the vines should be destroyed. Professor Hilgard said that the presence of phylloxera could be detected by the dead, basin-shaped depressions in the vineyards. The best place to find the insect is between the furrows, where the fine roots interlace.

A valuable paper on the peach was next read by Dr. Strentzel. It will be found elsewhere. A discussion on the peach followed.

Professor Hilgard stated that the peach trees were freest from curl-leaf in lofty positions, with comparatively poor dry soil. James Shinn, of Niles, stated that his own observation confirmed the foregoing. Mr. Dwinelle remarked that the white fungus on the peach tree was allied to the white mildew on the rose plant, and that, as a solution of blue-stone, in the proportion of one teaspoonful to the pailful of water, applied to the roots in winter, effectually cured the latter, and it might prove efficacious to the peach. Professor Hilgard stated that the most economical fertilizer was bones planted at the roots of peach trees.

The Secretary reported that the managers of the Mechanics' Institute had given the Society a prominent position in the Pavilion for an exhibition of fruits during the coming Fair. The members are asked to see that a good exhibit may be made.

THE SANTA BARBARA HORTICULTURAL SOCIETY.

July 24th this society held a meeting, and reports a large and enthusiastic attendance. The Secretary, Mrs. N. W. Winton, sends us a report of

the proceedings. Mr. Ford, the President, read the address on the Apricot which was delivered before the State Horticultural Society. A general conversation followed upon varieties, soils, stocks, and diseases. The following points were made: The cannery people prefer Royal and Large Early. Hemskirke bears poorly; in quality is excellent. The Moorpark is good in quality, but ripens very unevenly.

"Next," quoting the Secretary's letter, "specimens of the Apricots now being put up at the Santa Barbara cannery were committed to the test of five lady housekeepers, as they were supposed to be more critical on this subject so nearly allied to their own domain. Some wisely shook their heads over the blanched pits floating in the golden amber before them, and rather inclined to criticise that feature at least, but were obliged to confess it a great improvement after a candid test, in which the gentlemen approvingly joined. We all decided to go home and do likewise, as we do not care to hear, next winter, when we treat our husbands to the choicest treasures from the fruit closet, 'Very nice, my dear, but not quite equal to Sheffield & Dimmick's apricots.' No mortal housewife is expected to smile angelically over that remark."

With reference to soils, Mr. Weldon said that he had succeeded with the apricot on a piece of intractable clay soil on the top of a hill, where other fruits had utterly failed. Mr. Sexton, Mr. Cadwell, and others, had orchards of apricots on the richest bottom lands, but those on the hill-top bore best. Mr. Dunham had trees on open and friable loam, and at nine years of age they averaged 200 pounds to the tree. Mr. Bond, of Montecito, indorses the trees as being good for that amount. As regards stock, there was a unanimous testimony in favor of the peach. Plum stocks were denounced. Apricots on apricot stock do not stand well in that section.

The last act in the performance consisted of a general sampling of the fruits which were on exhibition.

THE SAN MATEO HORTICULTURAL SOCIETY.

The quarterly meeting of the Horticultural Society of San Mateo County was held on July 13th, in Germania Hall, Redwood City, and it was well attended. The principal subjects under discussion were a continuation of California Wild Flowers, by John McLaren; a paper read by James Burns on the Pruning of Fruit-trees, and one by Thomas Wood on the Cultivation of Roses in Pots. The subject of pruning called forth a strong discussion, some contending that fruit-trees did not require so much pruning as they did in climates where the growth was much slower. Others thought that they required just as much, and that the fruit would be much finer. The paper on Rose Culture in Pots was then read and discussed, all agreeing that if the instructions were followed they would be attended with success. I may state that there was a fine collection of wild flowers on the table, also a collection of Hollyhocks, Dahlias, etc., with a very fine specimen of the Night-blooming Cereus in flower, sent in by Jerome Turner, Redwood City. Subjects for next meeting are: "General Cultivation of the Peach-tree," and the "Most Suitable Varieties of Fruit for California." JOHN BURR, Secretary.

A man near Healdsburg has supported his family and cleared $400 from five acres of blackberries.

Editorial Notes.

A Portable Wire Plant Press. — Some years ago Prof. Wood described a botanical press, made of wire netting, which he had used with great comfort while collecting in California. Prof. D. C. Eaton, author of "Ferns of North America," writes to the *Botanical Index*, describing a similar arrangement, manufactured in New Haven, Conn. These presses are of such a size as to prepare specimens for the common herbarium paper, $16\frac{3}{4}$x$11\frac{1}{2}$ inches. Even kelps and rockweed can be dried in this arrangement.

Aquarium Notes.—It is said that it is better to put aquatic plants in small pots, placed in the water, than in the loose soil, for then their relative positions may be changed according to fancy. A writer in the June *Aquarium* says that this looks artificial unless Portland cement and sand are mixed together and applied to the outside of the pot. This may be simply a coating, or it may be built out into all sorts of quaint projections, knobs, and excrescences, according to the architect's fancy, by using pieces of pot, bits of stone, pebbles of various colors, coral, or shell, which the cement will hold in place. In this way the original shape of the pot is entirely lost.

The Paradise fish, which is becoming quite as popular as the gold fish, is a beautiful ornament to the aquarium, and well grown specimens measure three and one-half inches long. The head and gills are green and yellow, the scales are rainbow tinted, and there are stripes of red, yellow, and blue along the body. The fins are large and beautifully marked, and spotted with gay colors, and so is the fan-like tail. They build nests, live on vegetable food, and are very easy to keep. These facts are gathered from an article in the *Aquarium*.

A Rare Bird.—There is a species of Arctic Penguin called the Great Auk (Alca impennis). Within the historical period it was quite abundant on the Hebrides, Orkneys, and other islands north of Scotland, sometimes being found on the Scottish coasts. But it long ago began to retire toward the North Pole, and for many years has not been seen on these islands on which it used to breed. Two eggs of this bird, found in an old cabinet at Edinburgh, were sold at auction recently, one for $500, the other for nearly as large a sum.

A Choice Oregon Plant.—There is a herbaceous perennial plant, a native of Oregon and Washington Territory, which we should certainly have in our gardens. It is called the Lewisia rediviva, or the bitter-root plant, and it has a long fleshy root. Narrow leaves grow from the crown of this, and the large bright rose-colored flowers, which are four inches in diameter, have eight or ten petals in the corolla, and are produced in great abundance. As soon as the flowers appear the leaves perish, and after the flowers disappear the plant remains dormant until the rainy reason. The roots form an article of Indian diet.

Ten Exhibition Plants.—The following list of ten exhibition plants for this season is given in the *Gardener's Magazine:* Anthurium Scherzerianum, Allamanda Hendersoni, Bougainvillea glabra, Dipladenia Brearleyana, Erica ventricosa, Ixora Williamsi, Kalosanthes coccinea, Pimelea mirabilis, Stephanotis florabunda, and Statice profusa.

Arrangement of Bouquets. — Bouquets for vases should not have the flower stems tied closely. If put into the vase so that the flowers separate slightly a more graceful appearance is obtained. Feathery sprays of foliage should be mixed with the flowers. Lots of green and plenty of white is the rule for large bouquets. Often a flower looks best with its own foliage, as a rose in rose leaves in a small vase. But this is not an infallible rule. Sweet peas, stocks, lilies, pansies, and many other flowers look best when revealed against feathery foliage, or with geranium leaves. The colored leaves of such plants as the coleus contrast well with white flowers. In table decorations select bright colored flowers. Fragrant and delicate flowers are charming when used to decorate dishes of fruit. Sweet peas, mignonette, and heliotropes, for instance, look well with peaches and grapes. Flat glass dishes filled with flowers are always satisfactory for a table display. A vase with a tazza may be improvised by placing a glass goolet in the centre of a fruit stand or some similarly shaped dish.

A Lovely Idea.—A gentleman in Ireland happened to have a bed of unusually fine Anemone coronaria, and he saved all the seed he could. Then he wrote a note to a horticultural journal saying that there was a surplus to distribute (as we say in California, a dividend, and though he was Irish, not by any means what we call an Irish dividend), and, until the seed was used up, whoever wrote to him, inclosing a stamp, received a packet of the Anemone seed. Now, we like that. May the thought find wings, and so visit the gardens of every land, coaxing them, also, to give away their surpluses.

Color and Form in the Flower Garden.—Under this title the *Gardener's Magazine* considers the way in which the decoration of public parks and private gardens should be carried out. The chief errors complained of are the concentrating of the whole resources of the grounds upon a short display; the preponderance of gaudy colors (as in ribbon beds); the flatness, lack of variety, and costliness. The first thing to do is to resolve that the garden shall be gay with flowers from spring to autumn and

from autumn to spring. (This will be found easy in our beloved California.) The following perennials will furnish spring flowers: Perennial Candytufts, Aubrieltеas, Dwarf Phloxes, Anemones, Crown Imperials, Doronicums, Irises, Primroses, Polyanthuses, and many others. Next to these will come the Aquilegias, Spireas, Pyrethrums, Dianthuses, Delphiniums, Geums, Phloxes, Campanulas, Lychnis, Œnotheras, Lilies, coming in swift succession through the summer. Then the late Japan Irises, the Japan Anemones, perennial Asters, African Lilies, Chrysanthemums, Chelones, Heleniums, Coreopsis, Veronicas of sorts, and many other valuable herbaceous plants. The garden is also to contain what are called florist flowers, such as Stocks, Fuchsias, Petunias, Dahlias, Verbenas, etc. Of decorative plants we must find room for Cannas, Wigandias, Sumachs, Japan Aralia, and many other stately plants.

THE ARMY WORM.—As the daily papers of the State have long ago informed us the army worm appeared this year in the Sacramento hop fields, and also in a few of the cotton fields of Merced. The visitation was not a long one, and the enemy was soon conquered. Still, if any year they come in full force, it will require the best efforts of our farmers to check their progress. Our readers will also call to mind the fact that Long Island had a severe visitation of this scourge in June last, and Kent County, Delaware, also suffered in the same way. The army worm is about an inch and a half long, of rather a dusk black color, striped with yellow and white. The head is pale yellow. They burrow into the soil when mature, change into the chrysalis, and in a few weeks emerge as small fawn-colored moths.

CONCERNING PUSLEY.—The *Agriculturist* has been talking about "pusley." We are told that it is, botanically, Portulacca oleracea, and is a relative of our garden Portulacca. It is the same rapid growing, plump and heartless rascal of a weed that it was when it was called *Porcelia*, the diminutive of *porcus*, a pig, probably from its greedy, all-devouring habits.

THE BEST METHOD OF CARRYING FLOWERS.—James Vick remarks (and our own experience entirely coincides) that the best way to carry flowers any distance is in a common market basket. Expensive packages and boxes are not half so good. Take the basket; place a layer of damp moss in the bottom; bunch flowers as cut, each kind as far as convenient by itself, and set them close together in the basket, handful after handful, until it is full. Then cover the basket with strong brown paper. Cut flowers in the morning, if possible.

NATIVE EVERGREEN SHRUBS OF THE NORTH PACIFIC COAST.—It is said that there is no flora of the temperate zone which is richer in evergreen shrubs than that of the Puget Sound basin. About Henderson's Bay large tracts of land are covered with sturdy growths of Ceanothus velvetinus (Sweet Bay), which reaches its best development on poor soil. The leaves are thick, coriaceous, light green, resinous, and fragrant. The flowers are in umbel-like fascicles, arranged at the ends of the branches in dense cymes, or panicles, and the calyx, corolla, and pedicels of the flowers are white. The fruit is three-lobed, three-celled, tri-coccous, seed solitary in each cell. A closely allied species, C. Americana, is found on the Atlantic Coast. C. prostratus, another species, is found on the Simcoe Mountains, Washington Territory. Menziesii ferrugiuea, known as manzanita, is an attractive and floriferous shrub belonging to the order of Heaths. Of the Blueberries, Washington Territory possesses two evergreen species, Vaccinnium ovatum and V. caespitosum. The first grows on the beach, or near salt water, on dry soils. The second is found on the prairies growing in low, creeping masses, with white flowers, and large berries which are very eatable. It is called the bilberry. Growing on the same prairies with the foregoing is the Bearberry (Acelostaphylos), which has valuable medical properties. Its fruits, shaped like a currant, are deep red in color. In the recesses of the fir forests the Salal berry is found, and also the fragrant-leaved Wintergreen. The former (Salal) is the Gaulthuria stolon, the latter the G. procumbens. They have tubular shaped flowers with small lobes rolled backward towards the base. In the same localities the Berberis nervosa and the B. aquifolium are found. From the bark of the latter a valuable medicinal preparation is obtained. The fruit of both species contains malic and oxalic acid. In the sphagnum swamps of the Puget Sound country are many handsome evergreen shrubs. Conspicuous among these are several species of Kalmia, delicate shrubs which are widely distributed throughout North America. They bear their fragrant flowers in corymbs, white, pale purple, or rose-tinted, according to the species.

A VALUABLE CALIFORNIA SHRUB AND OTHER NEW PLANTS.—At the first August meeting of the Academy of Sciences, of this city, Dr. Kellogg exhibited flowering specimens of a most remarkable barberry tree from Big Canyon—the Berberis Fremontii—which grows twenty feet high, and its trunk is three inches in diameter. It was laden with golden blossoms, and may be cultivated and made one of the most desirable ornamental shrubs of California. It thrives well on poor, dry, rocky soils, and is celebrated for its medicinal virtues. Its sap furnishes material for making a most powerful yellow dye. He presented a fibrous plant, as yet unnamed, from Lower California, which shoots up a flowering stem from five to six feet high, and bears an ample mass of small white blossoms. He also exhibited a plant of the Comandra umbellata, belonging to the

family of sandal wood trees, which has been found in the Sierra Nevada foot-hills.

GENTIANA DUNNII.—At the last meeting of the California Academy of Sciences, Dr. Kellogg read a description of a beautiful violet-blue gentian found by G. W. Dunn on the mountains east of San Diego, in California, last June. The flower, a specimen of which was exhibited, is one and a half inches across; a very dark purple eye or centre, with, as it were, a brush-dashed border, fading into blue. The plant grows to a height of about three feet. The plant being a new one to science and unnamed in the catalogues of California botany, he took occasion to name it Gentiana Dunnii.

Pomological Notes.

PACKING PEACHES FOR DISTANT MARKETS.—Pick peaches carefully. Let them be well colored, but firm, not soft. Wrap each peach in stiff brown paper, not in tissue paper. The former is more elastic, and prevents bruising. In packing lay them in with the greatest care. Fill the box full so that the peaches can not shake about. Put a layer of clean fine oats straw at the bottom of the box and paper between the other layers and over the top one.

THE YOSEMITE STRAWBERRY.—This fine strawberry is a seedling originated in the Yosemite Valley by the first real settler, Lemon, who planted a bed of Wilson's some fifteen years ago. The berry is round, high-colored, necked, fruit in large loose clusters, appears to be prolific in shade, and gives promise of permanently retaining its character of continuous and late bearing. Further experiments will more fully determine its value as a market fruit.—J. C. C., *Pasadena*.

Reviews and Exchanges.

THE BOTANICAL INDEX FOR JULY.—

The ninth paper of the Water Lily series appears in the *Botanical Index* for July. It takes up the aquatic ranunculuses, and gathers in the compass of four pages about all that is of popular interest, together with many scientific notes about this interesting class of plants. There are in England a dozen aquatic species, three in the west of Europe, one in Siberia, one in New Zealand, and four in North America. Many other species are partially aquatic, adopting low and wet places as their homes. The American species, R. multifidus, is a good type of the class. This is a hardy, perennial, aquatic plant, growing in shallow streams and lakes, and bearing single yellow flowers in May, June, and July. The grandest flower of the whole genus is R. Lyalli, the water-lily of New Zealand, long heard of, but never seen in England until last year. The *Garden* gave a plate of this plant. The leaves are fifteen inches in diameter on erect stems. The flowers are four inches across, and are saucer-shaped, pure white or cream-tinted, having a central tuft of gold-yellow stamens. They grow in moist places in the New Zealand Alps, and evidently deserve general introduction. We hope this plant may be tried in some of the mountain lakes and reservoirs of California.

THE CANADIAN HORTICULTURIST FOR JULY—

This neat 16 page monthly is the organ of the fruit growers of Ontario. Of course many of the hints herein contained are adapted to our climate. Still we often find useful suggestions. In this number we are told of some fine named lilacs, one a double, grown by an Ontario gardener. We notice also that a Botanical Society has been formed in Canada, and it is hoped to have a Botanical Garden some of these days.

A SPECIAL REPORT RURAL NEW YORKER.—

The *Rural New Yorker* for July 10th contained 1,000 special crop reports from all parts of the United States. The wheat crop is the largest ever produced, and the corn is the same. Other crops are good, except hay, which has been a short yield in the Middle States. The pear crop is also short. These general reports, for which this journal has acquired a reputation, are worthy of high commendation.

THE GARDENER'S MAGAZINE.—

This interesting English weekly of July 10th contains articles on Allamandas, Dipladenias, Aphelandras; on bedding plants; on decorations for churches; on the training of Pyrethrums, Roses and other plants; exhibition notes from many horticultural fairs, rose shows, etc. The *Gardener's Magazine* is published at No. 11 Ave Maria Lane, E. C., London. The editor is Mr. Shirley Hibberd, a well known authority on horticultural matters, especially upon roses.

Vick's Monthly for July comes to us with a colored plate of autumn berries. We are shown the handsome clusters of the Celastrus scandens, or staff tree, the seeds of which are bright scarlet, hid in orange-hued envelopes. The Euonymus or Burning Bush has showy berries of scarlet, and the coral beads of the Black Alder cling to the bushes all winter. The purple berries of the Virginia Creeper fall soon, but are handsome while they last, and the drooping clusters of the Barberry are worth notice. The white berries of the red-twigged Dogwood (Cornus stolonifera) are needed for a variety. Both the American Holly and the Snowberry deserve a place in California gardens.

The *Aquarium* for June, published at Cincinnati, has an illustration of the Paradise fish, which is said to be one of the best for aquariums.

THE

California Horticulturist

AND

FLORAL MAGAZINE.

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Contributed Articles.

PRUNING FRUIT TREES.

By Jas. Burr, San Mateo Co.

The pruning of fruit trees is a subject of much importance to the landholders of California, and I think it is a subject that has been much neglected, especially in what I call the garden of this valley, San Jose. I have been there several times, and each time I noticed the neglect that was practiced in regard to the pruning of the fruit trees there. In fact they do not seem to have been pruned at all. It seemed to be the idea to get the most fruit in the shortest time, and not to care what became of the trees. Now my idea is to prune a tree in its youth whether it can be done in its old age or not. The most of the orchards that I have seen in Santa Clara County seemed to have been let run without ever stopping. Now, to let a young pear tree, for instance, run even one year in its youth is very wrong; the eyes the next year produce flowering buds, which will most likely produce a heavy crop of fruit. What is the result? The limbs become overladen, and break down, but if they were properly pruned there would be no broken branches.

My experience in pruning apples and pears is to allow not more than eleven or twelve inches of the young wood to remain as a leader, and to spur the side shoots in. The side shoots should be cut off to within one inch of the stem, when they will eventually form flower buds, which is the great object of pruning. It is much easier to pick off fruit than to put it on, and I therefore think the more flower buds you can produce the better it is. You must also take care to leave more young shoots as the tree advances in size so as to form a good head.

In the stone fruits it is different. Stone fruit produces its fruit on the year-old wood, and therefore the young wood must be encouraged; but if you want good fruit always prune well, and never allow more than eight or ten inches to remain. Thin out your plum and peach trees well, for this will give the young wood air, and on the young wood depends the crop for the following year. Thus, too, the wood ripens better, and forms fine strong flower buds for the following year. Care must be taken always to cut your young wood back to a wood bud. You will most always find a wood bud where there are two flower buds together. Apricots do well on the spur in this county,

but you get finer fruit on the young shoots.

Cherries, after the trees are grown up, need very little pruning, but strong healthy young trees should be well cared for. Never leave more than one foot of young wood on, so that your trees will thus be strong and self-supporting. Thin out the side shoots when not wanted. Cut them back to about one inch, and they will then form spurs and produce flower buds. When trees grow too robust and strong, you must have recourse to root pruning in the fall of the year, say November. Dig a trench two feet deep or more, all round the tree, about three or four feet from the trunk. A good deal of judgment must be used in this respect. See that the roots are cut off smooth, and not left ragged and torn.

It is also a good thing where time can be found to go over your trees in the summer (the latter part of July will be the most suitable time) and take out superfluous wood. Leave no more than is really necessary. Pears especially benefit by this summer pruning. Spur the side shoots back the same as in the winter pruning, but you must not interfere with the leader unless it is very robust, then take the point out.

THE HELIOTROPE.

By LORENZO G. YATES, Centreville, Cal.

This well known and deservedly popular plant is one of the most satisfactory flowers for conservatory or garden. It has been admired for its delicious perfume and modest appearance from the time that Jussieu, while botanizing in the Cordilleras, first inhaled its odor, and instead of tracing it to some large and brilliantly colored flower, discovered its clusters of pale lavender flowers.

The name Heliotrope is derived from two Greek words signifying "sun" and "I turn.' In England it is known as "Turnsole," probably a corruption of the English word "turn" and the Latin or French "sol," the sun; it is also called "The Cherry Pie Plant," from the resemblance of its fragrance to the odor of well-cooked cherries, although the propriety of the latter name is not so apparent here as it is in England, for, if our memory serves us aright, the cherry pie of Old England has a sweeter and more permeating odor than those made on this side of the Atlantic; still the fancy may be only another illustration of the well known fact that as we grow older our senses fail to give the prominence to favorite flavors which we remember to have enjoyed in the days of our childhood.

Some species of heliotrope are indigenous in Southern Europe, and others in Asia, while California claims one species; it has the same general form and color, but lacks the fragrance for which the Peruvian and some other species are prized. Of late, in common with numberless other plants, great improvements have been made in the varieties of color and habit of growth, notably in the "Star," but this has not precluded the use of the old varieties for stock and climbing plants. The heliotrope is not only valued for its free and persistent blooming, but also on account of its freedom from the ravages of insects, and its thirfty appearance. It is readily propagated from cuttings under favorable conditions, and thrives well in our mild climate. It will generally live and flourish through the winter out of doors in Central and Southern California.

Some of the late varieties make fine conservatory plants, as small bushy plants in three inch pots. It may be allowed to make a larger bush, or used as a climber or trailer, hiding the pot

under a beautiful covering of leaves and flowers.

NOTES ON PEACHES.

By JAMES SHINN, Niles, Alameda Co.

The timely article in the July number of the HORTICULTURIST, by W. B. West, of Stockton, on the subject of leaf curl in the peach, will interest all growers of that fruit, everywhere, whether they grow many or few. The disease has been more prevalent this season than usual. It is perhaps safe to assume that not one-half of the peach trees in this State will yield full crops this season, and very many trees have failed utterly, so far as fruit is concerned, and not a few of some varieties have been so severely affected that their full recovery is at least doubtful. The attention of all fruit growers having thus been forcibly turned to this subject, the discussion of it upon all suitable occasions is especially timely.

As my friend West suggests, the *cause* of this disease is of less practical importance than the effect, and the remedy. The most competent observers seem to have agreed that it is produced by atmospheric causes, but just how, no one knows. Sudden changes from mild warm weather to cold and windy, at a certain period in the early progress of the sap to and from the newly forming leaves, may have something to do with it. This view of the subject is much strengthened by the effect which altitude seems to have in modifying the severity of the leaf curl. Observations made this season by a very intelligent fruit grower in one of the interior valleys go to show that peach trees standing only one hundred feet higher than others, were far less affected with curl than the same varieties standing in the valley below. This gentleman remarked distinctly that the severity of the disease seemed about in proportion to altitude. It will readily be perceived that this question of altitude in its effect upon the leaf curl, is a very important one, and it is to be hoped that our peach growers will make and publish further observations in this direction.

While it is quite unnecessary to describe the effect of leaf curl upon tree and fruit, in its general course and result, I would call especial attention to the singular fact, that some varieties are never badly affected, while some others, it may be in the same orchard, will be so seriously diseased as to fail to bear fruit. Some varieties of the peach are so wholly subject to leaf curl that they seldom yield fruit. Some, which curl more or less, seldom fail to yield good crops. The present season has developed this disease to an extent seldom if ever known before on this coast. Several varieties heretofore entirely free from it, have this year succumbed to the curl. The present is therefore a suitable time to consider remedies. But are there any remedies? No! All attempts at cure are sheer quackery. But though we may not cure the disease we may avoid it. How? *By planting only those known to be in good measure proof against the curl.* This is the only remedy. To facilitate this course, and to the entire discarding of the curlers, let growers of this fruit observe carefully what varieties do and what do not curl, in their respective localities, and make the result known to the public, especially to nurserymen and to our horticultural and pomological societies. If proper attention is given to this subject, we may soon be able, by discarding all unhealthy varieties from our present lists, and by adding new and healthy sorts to establish a list of healthy varieties of the best quality

of white and yellow, early and late, free and cling peaches that shall be so nearly free from this destructive tendency that good crops may be expected every year.

I remark in this connection that it is especially desirable that those who have peach orchards on hill-sides or slopes, more or less elevated above the lands usually planted to the peach, should observe the effect and the severity of the leaf curl in such elevations as compared with its effects on lower lands and the same varieties in the same vicinity. In this way we may obtain data by which to estimate truly the influence, if any, of altitude in modifying the severity of this disease.

Mr. West has given in the article above alluded to a list of varieties which are subject to curl, together with a list of those that are healthy, in the neighborhood of Stockton. This is in the right direction, and when we have similar lists from the different sections of our widely diversified field of observation, we shall at least be able to make a wise choice of varieties for planting. There are, no doubt, a few sheltered localities here and there in some of our warm valleys and in wooded situations where this disease is nearly unknown. In some other places the curl is always so light that little danger is felt from its effects. A list of trees that might safely be trusted in one situation would be quite unsafe in another. I append a list which may be depended upon without material variation for most of the coast counties, and especially for those valleys and low situations near the coast. My point of observation is at Niles, Alameda County. My soil is sedimentary, somewhat light, and well adapted to peach culture. The Crawford's Early and other healthy sorts have borne fair crops every year except one for twenty years. The single exception alluded to was occasioned by a very heavy white frost which occurred March 28th, 1859. Here follows a list drawn with as much accuracy as my opportunities and the nature of the case will allow, and including only such varieties as I have been familiar with.

The Amsden's June, Alexander's Early, Briggs' Red May, Early Tillotson, Large Early York, and Shinn's Rare Ripe, may be trusted to resist the leaf curl. They all bear fair crops this year. They are all white-fleshed peaches.

The following, also white-fleshed, curl more or less, always, and all have failed this season to grow fruit, viz.: Waterloo, Brice's Early, Early Beatrice, Strawberry, Hale's Early, George the Fourth, Early Rivers, Early Louise, Troth's Early, Mountain Rose, White Imperial, Stump the World, Old Mixon Free, Ward's Late Free, Thurber, Prince of Wales, President, Amelia, Ruding's Late Red, Silver Medal, Natchez Belle, La Grange, Druid Hill.

It will be seen that according to the above list a very large proportion of the white-fleshed varieties are subject to this disease to such an extent as to prevent fruitage the present season. It must be remarked, however, that some of those included in the black list are very valuable peaches, and do *generally* bear fruit. I will name a few of those which may be placed in that category. Some of these are indeed essential to any good family collection of peaches. The Morris White, Hale's Early, Stump the World, Strawberry (not the Early Strawberry), Mountain Rose, Early Rivers, Natchez Belle, Ruding's Late Red, and perhaps one or two others are all excellent peaches, and, I repeat, may be expected in ordinary seasons to produce fruit.

I now come to speak of the yellow-

fleshed peaches. The proportion of these which are subject to leaf curl is much less than that of the white. The St. John, Foster, Crawford's Early, Mary's Choice, Richmond, Honest Abe, Seller's Free, Susquehanna, Picquet's Late, Jones' Seedling, Salway. These all are bearing full crops this season, and although some of them curl very slightly, they may be relied upon to bear fruit every year so far as leaf curl is concerned. These varieties of yellow peaches constitute a line of that class ripening through the season very nearly in succession, all of best quality, and leaving little more to be desired of the yellow peaches, except that perhaps an earlier yellow variety is a desideratum.

The Jacques Rare Ripe, Melcoton, Late Crawford, Reeve's Favorite, Lord Palmerston, Dagmar, Osceola, Bergen's Yellow, Smock's Late Free. Some in this list bear very superior fruit when they bear any; notably the Late Crawford and Reeve's Favorite. So far as liability to curl is concerned, the character of all of them is bad except the Smock's Late Free. I have hesitated to place this old standard sort, always heretofore healthy, in the black list, but it has failed everywhere this season, and must be ranked with the diseased, and with those that can not be trusted.

Clingstone peaches seem especially subject to leaf curl. Many of the finest old varieties have been discarded, in this portion of the State, on that account. The only healthy white cling that I know of is the Bamber Cling, a mountain seedling, fully tested here. The General Grant Cling will generally bear good crops and is a superior white peach, but has no fruit this season. Of the yellow clings the Nichol's Orange and the Seller's Cling are both very large and healthy, both of recent origin, the one in Contra Costa and the other in Alameda counties.

In view of the increasing demand for clingstone peaches for canning purposes, it is evident that more attention should be given on the part of nurserymen and fruit growers to the introduction of this class of peaches. A very considerable list of recently introduced seedling peaches may be found in the mountain districts of our State, and though many of these yield to the leaf curl when transplanted to the coast region as I have found upon trial, yet by continued experiment in this direction, and by steady efforts to obtain new varieties from seed, we may surely soon attain all that is desirable in the way of clingstones for canning, drying, and table uses.

AN AFTERNOON SAIL IN ST. AUGUSTINE.

By Mary C. Reynolds, Florida.

June 11th, 1880, was a beautiful, bright day, and the clear salt air and delightful ocean breeze gave great pleasure to a merry party of young people who sailed over to the lighthouse beach. The tide had nearly ebbed; the wind was good, but from a direction which rendered frequent "tacks" necessary, and we zig-zaged across the inlet from one shore to the other, until our last "tack" brought us to our landing place upon the "South Beach." Those of us who had lived a dozen years in St. Augustine could well remember the time when the hard beach upon which we now walked was scrub-covered land five or ten minutes' walk from the water, and when the low-lying isthmus which connects the sandy "Bird Island" with the shore was all unformed, and in its place was a deep ship's channel. "Bird Island," then

a small bank only showing itself at low tide, and taking its name from the number of sea-birds which made it their home, is now quite a respectable sand peninsula formed from the earth washed from the opposite shore. The action of the waves as shown here is truly terrifying. The dwelling-house connected with the old lighthouse, and standing between it and the sea, was in old times surrounded by a pretty garden, which boasted of a fine fig tree. Beyond, between the beach and the garden, grew a hedge of wild bushes. Storm after storm has caused the sea to encroach farther until now, in spite of barricades of piles, brush, and coquina rocks long since swept away, hedge, fig tree, garden, and dwelling-house are all destroyed. The square gray coquina lighthouse still stands, but it is deemed unsafe for persons to ascend its old stairways, and soon it too will be numbered with the things of the past. It is sad to see the scene of former picnics and pleasant rambles buried under the flowing tide, but such things come to us who live beside the sea.

The summit and landward side of the bluff which rises from eight to ten feet high along the shore, are covered with the Spanish Bayonet (Yucca aloifolia), and various kinds of shrubs. The inch long, thick spines which terminate the ends of these Yucca leaves caused one of the party who accidentally ran against them to think that they justified their name of "Bayonets." Passing through a "cut" in this bluff, we noticed that the tan-colored roots of the ubiquitous Saw Palmetto (Sabal serrulata) were very curious and conspicuous. These roots are often two or three yards in length, and they are as thick as pipe stems. In the sides of this "cut" is a forcible illustration of the great depth to which these roots penetrate, and the hold which they have upon Mother Earth. Behind the bluff there is a thick growth of shrubbery.

Anastasia Island, upon which our lighthouse is situated, is about eighteen miles long, and varies from one-eighth of a mile to a mile in width, having the ocean upon one side and the bay upon the other. Of course, all plants growing upon it must be able to withstand the double effect of salt air and strong ocean winds; nevertheless the island boasts a pretty good variety of plants, and several of these were in blossom at the time of our visit. We were charmed with the little bushes of Dodonea viscosa which grew only a foot or two high and bore insignificant green blossoms, but which showed by its balls of winged seeds its alliance to the maple family. These clusters of seeds reminded me strongly of the old-fashioned snowball trees of the Northern country gardens, and I think Dodonea would repay cultivation.

Callicarpa Americana, with its whorls of tiny, sessile white flowers succeeded by clusters of small crimson berries, is rather a coarse plant, but is pretty, and has received, for some reason which I can not imagine, the name of French Mulberry. Close by were bushes of our Christmas berry (Ilex Cassine), with its short branches, light gray bark, and quantities of small green berries set thickly upon the stem. About Christmas time these berries will be as large as ordinary currants, and of a glowing scarlet color, and make beautiful ornaments for home decoration. Around the courtyard of the new lighthouse, which is placed far back upon the island, the Virginia Creeper (Ampelopsis quinquefolia) hung in graceful festoons from the wild cedar and oak trees, and showed clusters of blossoms and green fruit. In the autumn these vines will

here be clothed with leaves of flame as well as at the cold North.

A few minutes walk in a northeasterly direction brought us to the old lighthouse, and on the way we noticed gay little plants of the bright Seaside Houstonia (Oldenlandia angustifolia var. filifolia), with its tiny pink stars; yellow skeins of thieving Dodder, and bushes of gorgeous Lantana resplendent with its yellow and scarlet flowers; little bunches of insignificant Phyllanthus Carolinensis with its minute green flowers and strongly two-ranked leaves; stunted bushes of the Matrimony vine (Sageretia Michauxii) not yet in blossom; young plants of Alternanthera flavescens which will blossom in the fall; the Horse Nettle (Cnidoscolus stimulosus) with its pretty innocent-looking white flowers, but harshly-stinging berries; and clambering six and eight feet high over any neighboring support, frolicked and reveled that curious milkweed vine the Cynoctum scoparium, with its short linear leaves, round green stems, and tiny bunches of minute green flowers, which are succeeded by conical pods about an inch long. The old coquina wall surrounding the old courtyard was covered with Ampelopsis, while the ground below showed mats of Modiola multifida with its pretty little pale red blossoms, and tangles of Poorman's Plaster (Mentzelia Floridana). The latter has golden yellow flowers which expand an inch in width; and leaves, stems, and capsules are covered with barbed hairs, so that when any part of the plant becomes attached to the clothing of a passer-by, it proves to be a veritable "sticking plaster."

Many other plants claimed our attention, but our boat was awaiting us, so we hurried over the half mile of smooth, hard beach which intervened between us, and soon set sail for home. There was a slight swell from the incoming tide, the breeze blew gently, and as the sun dropped below the western horizon and the light flashed from the lighthouse, we landed at the central wharf in front of the gray old town, happy in our captain's assurance that we should have many more such pleasant sails.

GLIMPSES OF NORTHERN CALIFORNIA.

By Wm. E. Norris, Susanville, Cal.

Away to the northeast of San Francisco lies a country as yet undiscovered. Indeed it is almost a *terra incognita* to the outside world, for it lies far from the usual routes, and is peopled mainly by pastoral communities who pursue the even tenor of their way, caring for their flocks and herds and tilling the soil. The country is rich in undeveloped mineral wealth, mountainous in its character, yet intersected with fertile valleys producing annually their wealth of succulent herbage, and furnishing subsistence to thousands of cattle, horses and sheep. Its mountain sides clothed with interminable forests of the finest qualities of timber; its clear, sparkling brooks distilled from the great laboratories on every height; its beautiful lakelets locked up among the eternal hills; its climate mild in winter and absolute perfection in summer, all conspire to make this a most desirable locality. It is indeed one of the fairest "by-ways" of California. Let us make a flying trip through a series of these valleys and you shall see for yourself whether the picture has been overdrawn.

We leave the Sacramento Valley in August, when the dog star rages and the scorching sun has parched the earth and seared the vegetation. In providing supplies do not omit fishing tackle and gun, for many a mountain trout will repose in our basket, and many a mountain grouse will be ours ere we re-

turn, not to speak of the flocks of mountain quail and the deer we shall find. Starting from Oroville we take the stage, and crossing the mountains arrive on the second day at what is known in the Post Office Directory as Longville, but in the vernacular of the country it is known by the inappropriate title of Humbug Valley. For whatever phase it might have presented to the disappointed prospector in times gone by, it is no humbug now with its fertile acres clothed with fragrant grass, with its dairies whose product is redolent with the perfume of daisy and buttercup, with its sleek cattle browsing lazily, with its chalybeate springs whose effervescing waters are recognized as a remedial agent. We travel a few miles further and enter the "Big Meadows," a large, beautiful valley, traversed through its length by the north fork of Feather River. Away to our left Lassen's Butte lifts its towering form and wears undisputed its eternal crown of snow.

The climate is simply perfect. The pure mountain springs furnish us with cooling and refreshing draughts; the breeze that fans us comes freighted with the odors of balm and spice gathered in its course through the undefiled forests, and we drink in great draughts of it and feel the quickly responsive blood dance and tingle through its channels, keenly sensitive to the life-giving element. We wonder why the old alchemists instead of concocting vile mixtures did not come to the mountains and endeavor thence to draw the elements for compounding their elixir.

As we bowl merrily along over the smooth level road, we are enchanted with the prospect. The sky from horizon to zenith presents one unbroken surface. No cloudlet nor fleck of vapor mars the unity of rich color. The mountains reveal crag and spur, turret and bastion standing forth in bold relief, their lines and conformations clean cut as by the chisel of a sculptor, then gradually losing their sharp outlines until their asperities are toned down, lost in the distance, and finally become blended with the deep blue and disappear. The cattle stand half hidden in luxuriant meadows, and the tall grass and brilliant wild flowers undulate in the breeze like the waves of a miniature sea.

Next our journey lies for a while through a dense forest whose mighty giants almost dispute the passage of our vehicle. Huge sugar pines spring up a clean hundred feet heavenward before putting out a limb, and girth at half that distance from the ground fifteen or twenty feet, while their companion trees, spruce fir, and yellow pine, hardly yield the palm in point of size, or symmetry of form. It seems almost murder to destroy these monarchs who have withstood the shock and fury of storm, tempest, and earthquake, for hundreds of years. Just now the chipmunks own this territory, and have owned it for generations by entailment. A protracted ride through the woods becomes wearisome; we are depressed by the unbroken stillness.

As we drive along our eyes are often gladdened with the sight of the gorgeous snowflower, justly the floral pride of our high Sierra, shooting forth like a column of flame from the sterile soil in which it delights to grow. This is ours and the valley dwellers can never take it from us. If you would have the beautiful flower to live with you must come up to the snow line, for it is a capricious thing and will not brook your sea levels and parched ground, but must have pure snow waters to nourish it, clean sand for its bed, and great

trees and rocks to protect it, and all these at an elevation of four thousand feet or more.

At last patches of blue sky begin to burst forth through the trees in our front and we know that we are approaching our journey's end, for the next valley is "Honey Lake," which will mark the end of our pleasant three days' journey. As we near the brow of the mountain that bounds the western end of the valley and wind down the sinuous road, the whole valley bursts at once upon our sight, and we hail it with joy. Far down to the eastward extends a broad level plain, dotted here and there with yellow fields of grain and green patches of waving grass. The low misty bank of vapor that bounds our vision in this direction marks the site of Honey Lake, a beautiful sheet of water twenty miles in length by ten in average width, from which the valley takes its name. High mountains from the northern and southern boundaries seem finally to meet and surround the valley. Through its length a gracefully winding ribbon of willow and poplar shades the waters of a sparkling mountain stream that irrigates in its course to the lake a number of ranches, besides furnishing power for the mills located upon its banks.

A DISH OF GUAVAS.

By H. S. Williams, Rockledge, Florida.

"They remind me very much of our peaches," said a Northern gentleman who supped with us last evening. "In fact," he continued, as he smacked his lips over the last spoonful—"In fact I must say they are a good substitute, with a good deal of flavor."

And he was right, cut up and sugared an hour or two before serving, they are truly delicious. A pie, or an old fashioned "cobbler," made of them reminds us still more strongly of peaches, and so we class them as our semi-tropical peach.

And now let us give a brief sketch of this valuable fruit. The Guava (Psidium L.) is supposed to be a native of tropical America, as it has been found growing in a wild state from Mexico to Brazil. With us it partakes rather more of a bush than the tree, growing from ten to twenty-five feet high and spreading fully as much. One hundred miles to the south of us it grows in the shape and size of a tree, attaining in some instances the height of forty feet, with a body ten inches through. The flowers are white, five-lobed, about the size of a silver half-dollar, handsome and showy. The fruit varies in size from a large orange down to a black walnut, is roundish and oblong, rind smooth, and pulp filled with small hard seed. We divide it into two classes, the sweet and sour. These in turn are subdivided into innumerable varieties, about as many in fact as one has trees. The seed are planted at any time during the fruiting season, for they germinate much more readily when fresh. We plant in drills in rather a damp rich soil. At the proper season, say March, we transplant in the grove or orchard, sixteen feet each way. In two years from the seed they will bloom a little and continue to increase for several years. Our oldest trees—five years from the seed—will average the present year about two bushels to the tree. They are a very uncertain crop north of 28½ degrees, and even here we have had them killed to the ground once—in December, 1876. When killed down—and the slightest freeze will do it—they throw out from four to six suckers, all of which grow up and bear fruit. The real fruit season commences the 1st of August and continues three months,

although fruit in sufficient quantities for home use can be had for nine months in the year if the trees are not injured by the cold. On our trees can now be seen the ripe fruit, the blossom and newly formed bud, while the fruit itself is in every stage of development. It is this constant fruiting that adds very materially to its value.

We also propagate by layers. We have tried budding and grafting, but without success. As before stated, the sub-varieties are innumerable. The reason is they sprout from the seed, not to any great extent, but just enough to distinguish the difference. We have an idea that the time will come when we will have varieties with the peculiar flavor of almost every other known fruit. For instance we have one tree, the fruit of which, eaten with the skin on, has the pungent taste of the nutmeg, another variety smaller and tastes exactly like the strawberry, others again like peaches as already hinted.

The fruit is so soft when ripe that it will not bear shipment, consequently it must be utilized at home. First the sweet Guava is eaten in the raw state, cut up and sugared to the taste, then served with milk; they are not only delicious but form no inconsiderable factor in our every day bill of fare. Pealed are equally divided—they are canned in large quantities, and by many are considered superior to the raw state.

The sour ones only are adapted for jelly. Who has not heard of guava jelly, and who that has tasted it when recovering from a spell of sickness will ever forget the rich, cooling, delicious flavor it imparts to the fevered mouth? In New Orleans and Mobile it is considered indispensable to the sick chambers.

Only five years ago it was said by parties who ought to have known, therefore they were generally credited, that none of our Guavas would jelly. Experience, however, has proven the fallacy of this idea, for all of our sour varieties not only jelly, but have that consistency that is desirable for a good market article.

The Guava also makes an excellent marmalade, much superior to the orange. The intelligent reader will thus see at a glance that the Guava is one of our most desirable semi-tropical fruits, both for the table and as a source of revenue.

NOTES FOR A SMALL GREENHOUSE.

By W. R., San Francisco.

Hard-wooded plants are the easiest taken care of, and do not need as much heat as some of the soft-wooded plants, yet some of these latter, as pelargoniums, fuchsias, cinnerarias, and some succulents, as the cacti, ought to be in every collection.

The Chinese azaleas are very desirable, but there are so many varieties, new and old, that it is hard to mention the best. S. B. Parsons, of Flushing, offers over 160 varieties of the A. Indica, and over 80 of the Belgian Hybrids. They are destined to be very popular in California, and in many places will thrive gloriously in the open ground. An azalea in bloom is the finest of all shrubs, not surpassed by even the camellia and rhododendron. The plant is almost hidden beneath masses of large, delicately tinted cups, often crimpled and frilled in the most charming manner. If I were to choose one dozen Azalea Indica for the greenhouse, they would be Admiration, white, spotted with carmine; Alba magna, white, purple striped; Baron De Vriere, light rose, spotted with crimson and edged with white; Brilliant, vivid scarlet;

Cedo Nulli, the finest of purples; Empress Eugenie, bright rose, with black spots on the upper petals; Fielder's White, the purest of colors; Glory of Sunninghill, salmon colored and double; Iveryana, white, shaded with rose; Marie Vervaine, variegated and finely crimped; Queen of Whites, double; and Vittata Rosea, an early winter blooming variety.

Every collection should have the superb Camellia. The double white is the best known, and oftenest used for decorating bridal occasions, etc., but for mere beauty it is perhaps surpassed by some of the tinted, fringed, and spotted varieties. The following are good growers, perfect in form, and open their blossoms well: Candidissima, a late blooming, pure white; Fimbriata, a lovely white, having the edges of the petals fringed; Bealii Major, a rich crimson; Alba plena, the best double white; Myrtifolia, carmine, shaded with light rose; Teutonia, with flowers all red, all white, or sometimes both red and white, on the same plant; Duke of Devonshire, scarlet and white; Donkelarii, with very large single vase-like flowers, of red spotted with white.

Chorozema varium is a rather scarce greenhouse shrub, bearing masses of pea-shaped blossoms, color purple and yellow. Daphne odorata, D. rubra and D. cneorum; Dracæna Ferrea, D. tricolor, and D. indivisa; the Ericas; the Rhododendrons, if kept in a moist and cool atmosphere, and Rhyncospermum jasminoides, a beautiful climber, may be used.

The following soft-wooded plants are desirable: Begonia fuchsioides; B. Ingramii; Calceolarias; Cinnerarias; Pelargoniums, in variety, and Cuphea platycentra, with Justicia and Pentas carnea. Primula sinensis is one of the most popular of plants for the window, the hanging basket, and the conservatory. All the double are choice, and among the single choose the fringe flowered, and the fern leaved. A few winter blooming Carnations and Pinks, succulent plants, Cereus grandiflora, some of the Epiphyllums, Echinocacti, Sempervivums, Crassuluses, etc. Then, also, a few Hyacinths, Amaryllises, Cyclamens, Tropeolum tricolorum, T. Jarretti, and T. pentaphylum may be added. Among the orchids choose Bletia hyacinthina, Cypripedium insigne, and Cymbidium sinense. For ferns we may have Davallia canariense, Adiantum cuneatum, Pteris serrulata, Lastrea Sieboldii, and a host of others. This list gives merely a glimpse of what may be grown in a small greenhouse.

"LILIES OF THE FIELD."

By J. D. B., Alameda, Cal.

All wild o'er Syria's plains there grows
The scarlet Martagon
With umbeled petals, richer far
Than robes of Solomon.
Away from man-made garden grounds
Go ye, into the fields,
And, from the lovely lilies, learn
The lesson Wisdom yields.

"Go view the lilies of the fields,"
The glowing Martagon;
Go breathe the sweet perfume it yields
At morn, at eve, at noon;
Go learn how frail a thing thou art;
Thy helplessness perceive;
And then, go learn the lily's art—
In beauty how to live.

Salt is a necessary fertilizer for plum trees on most soils. Sea-weeds are used to excellent advantage both for manure and mulch in plum orchards. The Weaver plum will stand more salt than any other variety. It will grow to perfection on salt marshes which are not sufficiently reclaimed to produce other crops.

LEAVES FROM MY NOTE-BOOK.--No. 2.

By the Editor.

In the July No. I culled a few remembered words from a brown note-book, boyishly enough, perhaps, but certainly with purest faith that I should be understood. And replies from this one and that one came back gently, and yet with truth's earnestness. So let us now search if haply we may find yet other leaves for friendship's sake. Be it told for your comfort, that to the writer who loves his art, each reader *is* truly young and fair, and near as a friend whispering in the twilight.

How the children long to be grown up; the men and women yearn after childhood's simplicity! Love for work we may have, and faith in the purpose which links the ages, and shines forth from all that is or will be. But sometimes a thought of being weary takes possession, and will not easily leave us. It means, I think, that we must give up care for awhile, and rest, and forget life's turmoil.

TIRED.

Palm unto palm to lie
In purest calm of sky,
  And be a child again,
Where shadows cross above
And bird-songs weave their love
  On floors of shining grain:

To hide in grass, a child,
By winds that pass me wiled
  From every thought of pain;
Till earth should grow too fair
For the child-heart to bear
  Without sweet tears, as rain.

The methods of resting, however, which persons develop, if left to their own resources, are numberless and curious. Too often the proposed rest takes the form of a mere change of activities, and tired people fanatically insist upon a round of sight-seeing, parties, and mild dissipation, though sea and hills are endlessly urging us to be for awhile quiet and merely receptive creatures. Such discipline is always profitable. The things which are most worth seeing are but slowly revealed to our dull perceptions. We must look, and look, and look again before even the simplest flower is able to tell us its meaning, to show us its entire beauty.

BY HIDDEN SPRINGS.

I wandered once, in lonely wise,
Beneath the happy April skies,
And where sweet rivers singing rise.

Wee spiders watched their nets amid;
The shy quail through the copses slid;
Brown rabbits under fern-leaves hid;

Gray squirrels sat on grassy mounds;
The blue jay passed on rapid rounds;
The world was full of mingling sounds;

In silver loops the river rolled
Round willow islands fold on fold,
And past the knees of mountains old;

While far off in the north-land shone
Gray walls of monumental stone,
And Shasta's summit pale and lone.

A hollow in the slopes I found
Where grasses grew, and wild vines wound,
And violets blossomed near the ground.

The manzanita, stemmed with red,
Waved clustered urns, whose fragrance bled
Through the dark branches overhead;

The columbines their trumpets blew
In five clear blasts, so rare and true,
The horns of fairy land I knew;

And lowly, up the leafy lanes,
The dreaming larkspur's tender strains
Crept thro' the spider's silver chains.

Long while the clouds went drifting by,
White sails of hope, in seas of sky,
Till I had rest beyond reply.

Can any one ever forget the impressions made in earlier life; the way that first things of any sort gave pleasure once? How rich the first silver dollar made us! Was ever orange since so sweet as that first one, divided into

flakes, so that each member of the family might taste? Life for a child is full of new experiences, and I am sure that children often have a swift perception of the relations of things. They have an intense delight in simple existence, in breathing air, in feeling soft winds, in seeing water ripple, moonlight glimmer, and waves of sun and shadow flicker across a field, in gathering wild flowers and hearing birds sing. The pleasure of finding these things is simply inexpressible, and the child does not wish to try, but simply to hide away and be happy. Perhaps he would like to sing (that being the earliest of spiritual longings), but if this may not be, the time comes when other ways are found. But most of all, to a real child, the stars have a visible meaning, and voices full of mysterious rapture, making him quiet with unspeakable joys of new thought, and leading him to weave tales of his own about life, and the brave, hopeful years, and the stars, tender and pleading, with more than human sympathies. In the brown notebook there lies that which once seemed a real vision. How long ago it was shaped, I know not, but it fills many blurred pages with cramped and boyish writing, and part of it is here for you, gentle reader.

A VISION OF LIFE.

It was night, and I wandered forth where the light of the newly risen moon lay in white circles on the sleeping hills, and the billowy grain fields shone as silver seals of infinite purity. Steadily I watched the sky, until it seemed to be a terraced mountain, crowded with shining blossoms, and flitting fireflies, and lamps of glorious gold. There, also, as it seemed, was the blue curve of a winding path which circled upward by pearls of drooping stars, and ended in an open space guarded by kingly watchers throned in unutterable silence.

Then I saw that this open space was an arena watered by a shining river, whose drops were sometimes silver-white, sometimes golden, and sometimes crimson as blood. Two gates there were, opposite each other, and through the first the winding path went; the other passed under a coronet of stars whose light rose in a tremulous arch wherein all colors clung, and mingled at last in snowy whiteness, rising in a hollow path; and though I could not see through the shining veils, yet I caught a faint glimmer, as of bright ones going by, which made my heart beat faster. And over the first gate there was a question written, but, as I have heard, it is for no two men the same; and over the second gate there was a reply, but I could only see a star for a period.

Then I saw that there was a hush of expectancy brooding upon the walls, and fading off among those far circles which were possessed by shining eyes —not stars, but that of which a child's earlier thought of the stars is a promise and a sign.

Slowly up the winding path of which I have spoken, and toward the open arena, there went many whose faces I could not see, each riding a steed which had grown with his strength, and obeyed his slightest wish. To each one of these the star-folk held aiding hands, and those who took them were lightsome-hearted; they offered crystal cups, and those who drank had crystal thoughts; there were tiny blossoms nursed in hushes under starry leaves, and those who bent to kiss them had the flowers reflected in their faces.

One by one they rode up to the gate, the herald blew a trumpet, and they passed under the questioning arch.

There they stood, facing forms that grew from the sand beneath their feet; facing phantoms that woke from their own hearts, and stood panoplied before them; facing shapes of enchanted stone with basilisk eyes; facing pale passions with disheveled hair; facing strong foes whose brawny hands held battle maces; facing vague terrors handed down from dim centuries; facing despairs, desolations, shames unnumbered, woes worse than death, and untold temptations. Each one rode past a shadow-girded place, where was a Circe cup wreathed with fair words and smiles, and, some drinking deep of that passion cup (which to no two meaneth quite the same), rode thereafter in a blind maze, with somewhat of youth's purity forever lost. Others there were who rode gayly past, with the sun-heat of battle shining in pure eyes, with heads uplifted, with lances poised in rest, and with healthy, well-cherished, unwounded battle-steeds. And from the circles of light a star-child leaned, watching these.

Then there was one rode in, and his armor was streaked with rusty stains, and his steed was bruised and bleeding from many wounds, and his clothes were rent and soiled, and from the star-blossoms he had crushed a wail followed up the path, and trembled through the gate beside him. Then the herald's trumpet blew in a wavering, uncertain way, and the star-child, looking, wept, but the Wiser Ones said, "Wait," and light shone, and the wails of reproach were still. But of this the man with stained armor knew not, and his face was sadder than the saddest grief of earth, nor did any of the other knights speak to him, nor any servants come to his aid. So, with his own hands, he tried to brighten and strengthen the stained armor; with his own hands he bound up the wounds of his steed, and with pale lips, sorrowing, he set his lance in rest as the trumpets blew.

Then there was a wild mingling of steeds, a cluster of surging weapons, fierce cries mingling with clash and clang of sword and spear. Then a faint cloud arose, widening, and the plain of battle was like a fair world, floating in space, a rounded, glimmering scene of passionate and multitudinous activities. And, deepening thus, the cloud hid all from sight, and the vision of life was ended.

Correspondence.

[The editor of the CALIFORNIA HORTICULTURIST cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

BEE AND HONEY NOTES.

EDITOR HORTICULTURIST—Dear Sir: I am very often asked by letters from interested parties in different localities my ideas of their particular district for a good quality of honey. I recollect when I first came to this part of the country that everybody that had tried the bee business had failed, the bees died, moths got the best of them, and the honey had too much thistle, etc.

When I first tried to sell honey at Napa it was hard work, but I am gaining every season by watching the time of the different blossoms and using the extractor at the best time, and thus keeping the different qualities separate. Honey should not be extracted from the comb until entirely sealed over by the bees, and must not be taken from the brood combs, except to give the queen room. The popular demand is for comb honey in small frames, but in a season like this just passed the bees seem loth to go in the sections, and confine them-

selves mostly to the brood apartment, thus crowding the queen, and compelling the use of the extractor. An extractor should be all metal and no part of wood.

Everything in use about the honey room should be clean. After being extracted the honey should be allowed to stand awhile, and when drawn off, taken from the bottom of the receptacle. No heat is required. Honey like molasses works itself; the ripe honey settles to the bottom, leaving the thin and lighter quality at the top. It then should pass through a metal sieve, about fifty meshes to the inch, which will leave it ready to bottle. If it should crystalize in the bottle it only needs to be put in a kettle of water on the stove and gradually melted, not boiled nor even simmered, which will make it as good as new.

A family having from five to ten hives of a good pattern of movable frame, arranged with a tin of small boxes above, ought to furnish themselves with all the sweets needed, except perhaps sugar, for the table, and for making jellies. All other uses of sugar or syrups can be well supplied by using honey—for cooking pan-cakes, for sauces, and in putting up fruit, using the same proportion of honey, by weight, as would be used of sugar. By honey I do not mean all that goes by that name, as I believe there is a spurious article on the market, manufactured as glucose, with powerful acids. I mean pure and good honey. Every farmer could raise all his own, and to spare, at fair rates, and so drive the spurious out of the market.

The fruit that took the best premium for preserves in glass at our last State Fair was put up with *pure honey*, and it kept well until used up—every bit of it. The quinces were soft and of nice flavor, and would melt gradually in one's mouth. Common sour apples would not be recognized as apples, but appeared something nice. Peaches—peeled, pitted, and halved—made to fill a jar, and raw honey poured over them so as to fill the jar, were delicious in a week after, but on keeping a length of time they turned sour like vinegar, but they came through with the flavor of brandy peaches.

My bees gathered from almond and cherry bloom, blue sage, wild buckwheat, willow, azaleas (wild), blackberries, burr clover, Yerba Santa, mints, boneset, Spanish alfalfa, bear bush, and other wild flowers of this vicinity.

Yours truly,

J. D. Enas.

Sunny Side Apiary, Napa Co.

SACRAMENTO FRUITS.

Editor Horticulturist:—The present season has seemed most peculiar to every one, especially to the fruit growers. Early in the spring strawberry growers had made every preparation, and expected to realize a fair profit from their crops. The season being late, the early fruit blossoms were destroyed by frost, and the cold atmosphere had a retarding effect on the crop that followed. Consequently there was a light yield, the berries were small, and the time of picking was shortened.

Blackberries following in their wake also had their mishaps. The ends of many vines were frost killed. When the northers swept over the rows that stood in the line of the wind they suffered far more than those crossways. The injury was done by whipping off the new wood, and breaking the leaves, and in a few instances by drying the north side of the bark, and weakening the cane. A lighter crop and smaller berries was the result. Notwithstand-

ing these discouragements, the sales were better than in previous years, as there was but a light crop of apricots and other fruit that generally lessens the sale of berries towards the close of the season.

The almond, nectarine, and apricot, were a light crop. The former and latter do not do well except in spots. When placed in favorable situations they bear heavily.

Peaches, plums, and pears, suffered in the same general way. The plums least of the three. The apple crop is more abundant, but the codling moth appears in many orchards.

There were fears at one time that the grape crop would prove a failure, but there are but few cases of short crops. The majority of vineyards are doing well.

This is a bad year for semi-tropical fruits. Last year's frost discouraged many, and a great many old trees were cut back by frost, and the small ones died. Those who escaped will next winter protect their trees by boxing them around, and filling in with straw.

The oranges and lemons blossomed lightly, the lemons scarcely retaining any fruit, and the orange losing a large share, which never happened at Sacramento before. G. R.

Sacramento, Cal.

A DESTRUCTIVE WOOD-BORING BEETLE.

Editor Horticulturist: — Anything bearing upon the habits of destructive insects being within the scope of your journal I send you the following note: It had been noticed for several years that the eucalypti on the University grounds at Berkeley that had been felled or blown down were affected by a boring beetle. Mr. Ellis drew my attention to a stump that was still in the ground, and also to some logs in the wood piles. They both contained evidence of boring but no beetle or larva. During March this year some limbs six inches in diameter were blown down and have lain in the shade till last week, the sap having just about dried, but neither the bark nor the wood being in the least cracked. These limbs were found to be infested with beetles. They had not bred in this wood, but were found at the bottom of their borings, three inches or more from the surface. This deep boring is a necessary piece of work preparatory to egg laying and colonizing. The name of this beetle is Sinoxylon decline Lec., belonging to the Bostrichidoe, a family of very destructive coleoptera.

J. J. Rivers,
Curator of Museum, University of Cal.
Berkeley, August 16th.

Editor Horticulturist—Dear Sir: A few lines concerning Nymphea coerulea might interest your readers. This fine aquatic plant is a native of Egypt, and one of the hardiest of tropical Nymphеas. The leaves are of a light green color, about fourteen inches long by thirteen inches wide, and the stalks are about five feet long. It can be easily grown by using the following compost: One-half good loam, and one-half old rotten cow manure; a little decomposed leaf mould may be added. The plants may be grown in a tank, or in a cheaper way by using a strong barrel sunk in the ground in a full exposure to the sun, but not exposed much to the wind. Put in about fifteen inches of the above named compost, plant the plants in, and finish the operation by covering it with two inches of clean river sand. Then use a fine-rosed watering pot, and begin to fill up with water; you might begin by filling up with one foot of

water, and keep adding to it gradually as the leaves lengthen. In this way the sun will warm it much easier. Nothing more will be required after this except to keep the tank full of water, and to see that the water is kept clean. If everything goes well, the plants will begin to bloom in about six weeks after planting them, and will keep it up until the winter months, when they will go to rest to begin to grow the following March again, when they will be stronger and more vigorous than the first year. The flowers are of a beautiful shade of delicate blue, from five to six inches in diameter, and deliciously fragrant. They open early in the morning, and close at 2 P. M. They will open for five days, then they sink under the surface of the water to ripen their seeds, which takes about five weeks. When the seeds are ripe the capsules containing them will rise again to the surface, when they will open, and the seeds will float for a few hours on the water. After this they will sink, and begin to germinate.

Respectfully yours,

C. J. HUETTEL.

San Jose, July 15th.

BRIEF NOTES OF INTERESTING PLANTS

Lietzia Braziliensis is a Gesneraceous plant. The flowers are in a leafy, erect raceme, green, spotted with purple.

Oncidium dasytyle is a Brazilian species from the Oregon Mountains. Pale yellow flowers marked with chocolate.

Primula Sibirica var. Cashmeriana, is an elegant Primrose of Northern India. It is very pretty when growing in clusters.

Linaria multipunctata is a dwarf annual, a native of Morocco, and is described as a charming plant. Flowers yellow.

BRIEF AGRICULTURAL NOTES.

October 4th the Santa Clara Fair begins.

Napa wine making will begin in October.

Kentish and Morello cherries do well at Niles.

Threshing is nearly finished in Berryessa Valley.

The Alvarado sugar mill will start up September 1st.

The Santa Clara Agricultural Fair begins October 4th.

The San Jose cannery is now employing 200 men.

Riverside raisin men will need 17,500 boxes this year.

Prof. Comstock is now in this State examining the orange pests.

There will be 500,000 oranges gathered in Riverside this year.

Placer small fruits are a large crop this year; peaches and plums a short crop.

There is a growing demand for the Buhach, or insect powder, grown in Merced.

Reservoirs for irrigation are being built in the San Gabriel Cañon, Los Angeles.

Japan Quinces are charming for groups, being the best of spring blooming shrubs.

Some Los Angeles people are going to refit and again use the large Alden drier in that town.

The Pescadero Grange has been discussing the question how to get out of debt, and how to keep out.

Dull tools are an abomination. Keep a good cutting edge on spades, hoes, and other agricultural implements.

To destroy weeds on the lawn, cut off the noxious plant at the crown; drop on a few drops of kerosene oil.

The best farmers, taking one year with another, sell their crops at going rates as soon as harvested. Delays are dangerous.

Threshing machines are scarce on the west side of the San Joaquin, and it is feared that the crops will not all be gathered before rains.

The world is prone to run after new things. First it was oranges, then grapes, and now apricots. Each orchardist should stick to whatever does best on his land.

Cuzco corn, the *Rural New Yorker* says, is nothing new, and is not a valuable acquisition. So much has been planted in various parts of this State that we shall soon know whether it is worth anything.

Train pear trees low, and in a pyramidal shape. Let the branches start out a foot or so from the ground in our warm valleys. Near the coast the main trunk may be three feet in length to the lowest branches.

Bananas are propagated by suckers. The dwarf Cavendish banana is one of the best for this State. It is a comparatively dwarf species, the stem attaining a height of four to six feet. The leaves are oblong, three or four feet long, and one or two feet wide; color, deep green.

French gardeners hasten the germination of the seeds of stone fruits by placing them in the common earthen crock, which is filled with bran, kept moderately moist. The bran ferments, softens the shells, and in about ten days they are ready for planting.

It is reported that George Briggs, of Davisville, is so well satisfied with the result of the Asbestine plan of irrigation, and finds so much difference between the yield of the irrigated and the unirrigated land, that he will put the same system in operation over the rest of his orchard and vineyard.

When in active growth, it is surprising the quantity of water or liquid manure Chrysanthemums will take, and to insure thorough soaking, it is a good plan to have the crowns of the plants slightly lower than the soil, that a small basin-like receptacle may be formed round them, that each may get its due share without any loss.

Last month we spoke of poisonous garden plants, and intended to say "the Digitalis and the Monkshood" instead of a repetition of the latter. We would call attention also to the Datura sanguinea, seen in some gardens, though a greenhouse plant in the Atlantic States. It is a dreaded poison plant at the Isthmus of Darien, and the leaves must not be eaten or the results may prove deadly.

On Robert's Island the yield of wheat is simply enormous. Some will, it is estimated, yield seventy bushels to the acre. A farmer from Robert's Island lately offered to bet with a merchant that he could point out fifty acres that would yield seventy bushels to the acre. Next the farmer expressed a willingness to make the area one hundred acres. Still the bet was refused, when he offered other terms, designating three hundred acres that would average fifty bushels to the acre. There are large areas throughout the country on the

dry plains that will average as high as thirty bushels to the acre.

Mr. George Paul, in the *Garden*, suggests that the plan adopted of growing lilies in rhododendron beds might with advantage be extended to the rose. In that way the early bloom of shrubs and lilies would be succeeded by the still more precious summer and autumn roses. Apart from this advantage, however, this plan and similar ones are desirable, if only to save, or partially save, the rose from the dismal and stiff rose gardens that are seen in many places.

Centaurea rutæfolia is a hardy perennial, growing to the height of two feet, with branching stems amply clothed with deeply pinnatifid foliage, the entire plant being covered with a dense white tomentum, as in C. ragusina. It is, however, of freer growth than that popular species, increasing in size throughout the summer till checked by the cool of autumn. The flower heads are pure white, about one-half the size of those of C. ragusina, but much more abundant.

Clematis Pitcheri, a native of our northwest coast, is specially distinguished by the beautiful deep vermilion hue of its flowers, as well as by its thickish, rounded, drooping leaflets, of a pale bluish, sea-green tint. The petals of the flowers, of which there are four, are very thick and fleshy, and are carried on a long colored stalk. The flowers themselves are wide at the base, but narrow suddenly near the top, where the petals bend backward to form the opening of the flower.

Says the Director of the Melbourne Botanic Gardens: "Let me briefly describe one or two species of this order (Myrtaceæ) as an indication of the effects to be produced with such materials at command. First is the Syzygium Moorei (of which I have seen whole forests in Northern New South Wales and Queensland), attaining a height of seventy or eighty feet, and affording, when in full bloom, one of the most gorgeous spectacles imaginable; its every branch and even a part of the stem being clothed with one mass of royal purple blossoms, having the appearance of rich pile velvet."

A good rose for the garden comes from Nepaul and Kamoon, and bears the name of Rosa Brunoniana. Its large, stout branches, which are beset with rather strong, hooked prickles, often attain a height of twelve or fifteen feet, and are tolerably thickly clothed with pretty bright green leaves; the pure white, fragrant flowers have five roundish petals, and are borne in large corymbs. When in flower nothing can well exceed the charming appearance presented by this Himalayan rose. Where its bare stems might be an eyesore during the winter months, plant it behind not very tall evergreens, etc., and allow its long branches to droop naturally from among the twigs of low trees, such as the Laburnum, etc.

The Judas tree (Cercis) is well worth planting. Its foliage is very distinct from that of most other trees in shape and color, the latter being bluish-green on the upper surface and grass-green underneath. When old, the Judas tree forms a broad, round, flattish head, somewhat similar to that of an apple tree. The wood is not considered valuable, although it is hard and capable of taking on a good polish. As an ornamental tree in spring, it ranks as one of the most attractive, owing to the singular and beautiful appearance which it presents when its old, as well as

young, wood is literally covered with its purplish-pink blossoms clustered together in small bunches before a leaf is visible; and when associated with Laburnums, Lilacs, Flowering Currants, Azaleas, and other spring-blooming subjects, it forms a charming contrast in color, blooming, as they all do, at the same time. The Judas tree is also well suited for planting on a lawn, to form a standard bush as an isolated specimen.

BRIEF HORTICULTURAL NOTES.

Coleus ought to be in their prime this month.

Heliotropes grow well from cuttings at this season.

The hybrid Begonia Weltoniensis is a choice window plant.

The *Gardener's Monthly* says that gas tar put into ant holes soon drives the ants away.

Among Begonias which now appear well are B. ricinifolia, B. sanguinea, and B. opuntifolia.

"A grand decorative plant" is what the *Florist and Pomologist* calls the Tropoelum tuberosum.

The Persian Ranunculuses are well adapted to our climate, and fine seedlings can be grown with care.

Among Fuchsias, at this season, the peculiar salmon-red of Princess Alice is very desirable, and it should oftener be seen.

Hoya carnosa can easily be rooted at this season, taking leaves with a bit of the branch attached, and placing them in the propagating box.

Agapanthuses, now in full bloom in the open border, need little care, except to keep the soil mellow about them and to supply water when needed.

Wheelbarrows are a need of every garden of any considerable size, but they must be light and strong. This is also true in respect to fruit ladders.

Some fig cuttings from Smyrna, of the true Smyrna white fig, are now well rooted, though not received here until in June. They were packed in earth.

The Euonymus radicans is a good plant for covering walls with, especially in cities. Its glossy, cream-tinted leaves much surpass, in point of beauty, the variegated ivies. We hope to see it oftener planted, as it thrives in the poorest soils.

We may sow now, to bloom next year, the following: Anagallis, Anchusa, Calandrinia, Calceolarias, Centaureas, Cinerarias, Digitalis, Gaillardias, Ipomopsis, Loasas, Pyrethrums, Antirrhinums, Myosotis, Pansies, Delphiniums, Mignonette, Scabiosas, and many others.

Wisterias trained as standards are becoming popular abroad. They are to be tied to a stake, and the side branches cut off, until the plant reaches the desired height. Then let it form a head several feet in diameter and prune well each season. Such a tree would be magnificent on a lawn.

All the canneries of the State are busy at work. Peaches are scarce. The Alden drier at Los Angeles has begun work again after several years of idleness.

The grape-growers and the wine-makers are trying to settle the price to be paid this year for grapes. The crop will be large. Sanguine and often extravagant expectations of the possibilities.

SELECTED ARTICLES.

Evergreen, Deciduous, and Flowering Shrubs for Clay Soil.—Almond tree, Amelanchier, Althæa frutex, Arbutus Unedo, Artemisia abrotanum, Aucubas in variety, Pyrus japonica, Berberis Darwini and vulgaris, Box of sorts, Portugal Caurels, Cratægus (all the kinds), Laburnums, Ligustrums, Mespilus canadensis, Hollies (all sorts), Mock Orange, Lilac (purple), Guelder Rose, and Feathered Sumach.—*The Garden.*

Mr. Bright, in his *Lancashire Garden*, says the crocus is less cared for than it deserves. Modern poets rarely mention it; but Homer, when he would make a carpet for the gods, it is lotos, hyacinth, and crocus, and Virgil's bees find their honey among cassia and lime blossoms, and iron-grey hyacinths and glowing crocus. Virgil speaks, too, of the scent of the crocus, and Latin authors, when they wish to express a bright deep orange color, call it the color of the crocus.

Fremontia Californica.—In England this strikingly beautiful wall plant produces its large yellow blossoms freely on spurs, and upon young shoots of the preceding year's growth. The leaves as they expand have, a short distance off, the appearance of those of a hawthorn or flowering currant, but upon closer inspection they are found to be of rounder outline, and of much softer texture than those of the hawthorn. It looks beautifully when trained either horizontally or obliquely, and seems to flower best when cultivated upon the same system as that on which we grow the peach. The long, fine shoots that are exposed to air and light, and which have room to grow and develop themselves and get thoroughly ripened, produce clusters of large yellow flowers which can not fail to attract admiration. —*Gardener's Chronicle.*

The Poison of the Oleander.—In Dr. Hogg's Vegetable Kingdom occurs the following respecting it: It is one of the most beautiful window plants when covered with its large rose-like blossoms; but in these blossoms the weapon of death resides. During the peninsular war a number of French soldiers who went out foraging near Madrid returned laden with the fruits of their search. One of the number, with the view of securing some wood to make skewers for the meat, cut a quantity of oleander boughs, and, having stripped them of the bark, used the wood in the meat. The result was that out of twelve who ate of the roast seven died, and the rest were dangerously ill. The poisonous principle is so subtle that its exhalations alone are sufficient to cause serious accident, and even death, to those who recline or sleep for any time under their influence.

Improvement in Propagating.—Possibly in no department of gardening has there been such wonderful progress made as in the art of propagation. It is pleasant reading to go back over the gardening of magazines of but a quarter of a century ago, and see how much was made of propagating houses, propagating tanks, propagating glasses, and other *et ceteras*, and to note that the art of the propagator was ranked almost with the art of the magician. Now all this is changed. Good common sense is yet needed to be a successful propagator. Here before us is an old treatise on layering carnations, and cuts something like these, showing how things should and should not be done, abound. And then most of us older ones can tell of the days and days spent in bending over carnations as well as other

things, slitting and rutching and pegging down carefully every little bit of wood that could be held between the finger and thumb. Now it is so different. The carnation shoots, as well as the shoots of any other thing, are taken off in immense quantities, stuck in by the small boy in sand boxes, and these put in anywhere where it is a little warm, a little shady, regularly moist, without continued watering—and this is the whole art and mystery of the thing.—*Gardener's Monthly.*

Showy Cactuses.—These old-fashioned plants are well worth culture. They are easily propagated by means of cuttings, a piece of a plant placed in a well-drained pot of sandy earth, and not over-watered, being sure to grow; and, when in flower, there are few other plants that can rival them in brilliancy of coloring. It is almost impossible to kill them by any amount of ill-treatment, unless they are over-watered during the dull cold days of winter, at which period they should be dust dry, as they are apt to rot off at the crown. They are properly named Phyllocactus, or leafy Cactuses, in contradistinction to Echinocactus, Hedgehog, or Globe Cactus, and other species. When not in bloom, they can be stored away on any shelf near the glass, where they should be duly attended to throughout the summer, so far as watering is concerned. As window plants they have few equals and are very generally employed for that purpose in country districts. The following are distinct and beautiful: P. Corderoyanus, a fine scarlet or crimson, suffused with bright metallic-purple; the flower is four or five inches across, and is one of the most striking of the scarlet varieties. P. Jenkinsoni, bears a smaller flower than the last, of a bright scarlet color, and not fully expanded. P. Gordonianus, a large variety, with bright rosy or flesh-tinted flowers. P. crenatus, is a creamy-white variety, with large flowers, and contrasts well with the other deeper-tinted varieties.—*Gardening Illustrated.*

Culture of Lilies.—As with other plants, new introductions among lilies are for a while costly, but the majority, including the most beautiful, are sold so low as to place them within reach of all who can buy flowers at all. Their moderate cost is due to the fact that most of the species can be readily multiplied from the bulb scales. Each of the scales of which the bulb is composed, will, under favorable conditions, form a bulb, and sometimes two or more. This method, now no longer a florist's secret, will allow any one to multiply these beautiful plants, as it requires not so much skill as patience. One has only to carefully pull off the scales, and a few of the outer ones can be taken without injury to the bulb, set them out, just covering them in boxes of light sandy earth, and keep them at a uniform temperature of about fifty or sixty degrees. The earth is to be kept barely moist, not wet, and in about six or eight weeks minute bulbs will be formed at the base of each scale. All the lilies, except perhaps a few from the mountains of India, and hardy, and many that were formerly considered tender are now known to have suffered, not from cold, but from a long continued high temperature. Some of our cultivators, following the English method, planted the tall-growing kinds, such as L. auratum, in their beds of rhododendrons. This was done for effect, merely, as it gave the lily flowers the rich dark green of the rhododendrons as a background the better to show off their col-

ors, and it added to the attractiveness of the rhododendron plantations by clothing them a second time with flowers, as the lilies do not bloom until long after the shrubs have finished their display. Planting the tall lilies among deciduous shrubs can be practiced by those who have no rhododendron beds. Where the lilies are grown in open beds, we have no doubt a light mulch, preferably of leaves, would be of great benefit to all species.—*American Agriculturist.*

THE FLOWER GARDEN OF THE FUTURE.—The flower garden of the present time seems to be undergoing a slow transition. There is a blending of tender with hardy plants which is most desirable; tender and hardy plants appear only to have rival claims until they are placed side by side, when it is found that the attractions of either are about evenly balanced. Why should not the borders of shrubberies be made very much broader, giving room for dwarf and choice shrubs, with a blending of herbaceous plants? Many herbaceous plants, such as lilies, anemones, and hellebores, like shade, and would be benefited by the shelter and shade of choicer flowering shrubs, such as Berberis, Euonymus, Skimmia, Kerria, Spiræa, etc.

How easy it would be to form shrubberies and wild gardens of the natural undulations if the surface of mother earth were worked up and planted, leaving straight lines and angles to cabinet-makers and astronomers. We have under our eyes some such undulations rich with old masses of Dielytras, Arabis, Narcissi, Pulmonarias, shrubs, and the very model of what a herbaceous garden might be, not of our making. We always doubt the taste or utility of the artificial terrace, and the consequent geometrical flower garden, unless the position justifies it from necessity, which is seldom. A house in the country should not be built as if it formed a part of a street, but a part of the open ground on which it is built; the garden to fit also with the natural lay of the ground. No two houses, or gardens either, could then be at all alike, but would then be as varied as nature itself. It is to be hoped that the gardening of the future will have a place for everything, and everything in its place, whether herbaceous or alpine, succulent or aquatic, shrubs, evergreen and deciduous, and not excluding even the most extreme vagaries of bedding, seeing that all give pleasure, and seeing also that everybody's pleasure can not be cut on one model.—*The Gardener.*

Editorial Department.

HOW THEY ARE PLANTING ORCHARDS.

The other day there came to this editor a letter from a stranger, asking for information about trees and plants. A quiet, earnest, dignified letter it was, giving just the sort of essential information about the writer's plans and beginnings, without which help could not be rendered, and stopping short of that gushing confidence which is often so wearisome. The writer was a young man of twenty-seven, and had been working on a ranch. Taking a few months' vacation, he had found a cheap place of forty acres for sale in one of the northern counties, and bought it for $1,000, which measured the length of his purse. He went on the place, lived in a shanty, made improvements, and worked for the neighbors. Now he has money enough to plant out a small orchard, and he proposes to plant more each year until his whole place is set in trees. There can hardly be a doubt of

his ultimate success. This year he wants prunes, plums, apricots, pears, and some peaches. He will also plant a small vineyard, and our advice has been that he should use English walnuts and olives for avenue trees, and along the county road.

The second case of which we have knowledge, is that of a lady school teacher, in one of the southern coast counties, who has by patient endeavor saved enough to purchase a few acres of land. She is covering this with orange trees, grape vines, and an orchard of the leading deciduous fruits. She goes on with her teaching, spends her vacations in the little cottage on her "farm," has pleasant neighbors all about her, for it is a colony settlement, and looks forward with tireless hope to the time when the profits of her orchard will relieve her from the drudgery of the school-room. Nor do we think she will look in vain.

It has in various ways come to our knowledge that many young persons of small means, but of industry and pluck, are laying foundations in ways similar to those we have mentioned. They have faith in California, faith in themselves, and faith in the immutability of the laws of the universe. They are quite sure that whosoever soweth shall reap, and, also, shall reap that which he sowed. Though recognizing the problems, sorrows, and mysteries of life, they think of these as little as may be; quiet lives they would live, friendly with all living creatures, and knowing the pulse of the waves, the paths of the mountains, the shy songs of rivers, the companionship of clouds, the wise guidance of nightly stars. In order to have these things, so it seems to them as they toil, a rural life is best, and in many ways they choose the better part. If there were more of such young persons our waste places would at last become gardens of Eden.

THE WINGED PHYLLOXERA.

The viticulturists of California have had hopes that the winged form of the phylloxera would not be developed on this coast. For this reason we had thought that this plague might be less destructive here than in Europe, and might continue to advance as in the past, so slowly as not to seriously check the planting of new vineyards and the general prosperity of our grape industry. But our hopes have been destroyed. The winged form of the phylloxera was found in Sonoma County a few weeks ago, by Dr. Hyde, was shown by him to Col. Armstrong, of the Santa Rosa *Republican* and specimens were at once sent to Prof. Hilgard at the State University. Eight full grown winged specimens, found on one rootlet, were examined under microscope and, though five of them were of the infertile type, three were discovered to be fertile, and hence of the most dangerous form. Other fertile insects have since been found.

This of course is a matter of tremendous significance, and means that the infection of new districts is now liable to proceed with a rapidity before unknown on this coast. We have, however, the advantage of the experience of European vineyardists, and our soil is strong and unexhausted. Lands which can be flooded with water in winter will now be at a premium, and enough such lands can be had in this State to supply vines for the world. The use of hardier Missouri and wild California grapes for stocks will now be extended on the uplands. Continued experiments will be made with alleged remedies, and with different methods of cultivation. At our State Fair,

which opens this month in Sacramento, the State Agricultural Society will make an exhibit of the various fruit and plant pests, prominent among which will be the phylloxera. Vines infected with the insect in all stages of development will be shown through the powerful microscopes, and competent persons will be on hand to explain, as far as possible, the exhibit. The feeling among the viticulturists of this State is that the offensive must be assumed. A tax of a given sum per acre must be levied upon the 60,000 acres of vineyards in California, and this must be applied to check the insect, and to destroy infected vineyards.

THE STATE HORTICULTURAL SOCIETY.

The August meeting of the State Horticultural Society was presided over by Prof. Hilgard, and the meeting was said by those present to have been fully equal to the best of previous ones.

The following persons were elected members of the Society: J. P. J. Cather, M. Shydecker, John Connor, San Francisco; B. D. T. Clough, Niles; Dr. S. Porter, Napa; Nelson Carr, Santa Rosa; W. C. Prindham, Healdsburg; Dr. John Lockwood, Elmira; J. M. Asher, San Diego. The following were elected as corresponding members: J. I. Bleasdale, Secretary Viticultural Commission, San Francisco; J. Henry Comstock, Department of Agriculture, Washington, D. C.; Baron Ferd. Von Mueller, Melbourne, Australia; Richard Schomburgh, Adelaide, South Australia; Prof. Andrew Llawrado, Spain; Justin P. Moore, San Rafael, Cal.; Prof. Charles S. Sargent, Brookline, Mass.; A. Lacretelle, France.

The Committee on the fruit exhibit at the Mechanics' Fair reported that, although creditable, the display was not as extensive as was deserved. The display of apricots and other fruits from Los Angeles and Santa Barbara is good, but from the more northern part of the State, where the best fruit is produced, it is yet too early in the season for a favorable display. Probably later in the season, and before the Fair closes, a better showing will be made. No fruit had been received from Sacramento and Stockton, the fruit crop in the vicinity of those cities being a comparative failure.

The subject of discussion being prunes and plums, W. B. West, of Stockton, read a carefully considered paper upon those topics. Mr. West, it will be remembered, has visited Europe, and spent considerable time in France and Spain, studying the ways of horticulturists. He said that by his own experience in cultivating the fruit, and as he had also seen in France, the prune d'Agen was the most worthy of cultivation. The soil should be a rich clayey loam for the plum, and some varieties like the Imperial Gage will do well on sandy soils, but other varieties are usually short lived. It is an undisputed fact that California plums and prunes are larger and finer than the same varieties grown in Europe, but it is also equally true that our dried products are inferior to those imported. In this State the fruit is dried either in the sun or in patent driers, while in France the method was entirely different, the fruit being cooked in an oven. In France the prunes are allowed to remain upon the tree until they are thoroughly ripe and ready to drop at the slightest touch. Layers of straw are placed upon the ground beneath the tree, and the fruit is then shaken off, the straw preventing injury by the fall. The prunes are placed upon willow trays and allowed to shrivel in the sun for a short time, for the purpose of

rendering the skin tough enough to endure the subsequent stages of the process. The fruit is placed in ovens and subjected to a heat of from 135° to 180° Fahrenheit for twelve hours, when it is taken out and allowed to cool as suddenly as possible. It is then turned and replaced in the oven, and again subjected to heat, this time from 180° to 200°. Sometimes the fruit is subjected to the heating process for the third time, a higher degree of heat being used. It is then sent to the packing houses, where it is assorted according to size and packed, but there were some secrets about the packing which he was unable to learn.

It was believed by many present that with a little care the California product would command as high a price in the Eastern markets as the best imported article; and owing to the importance of the subject, it was decided to continue it at the next meeting. A committee was appointed to confer with the commission merchants and others in regard to the size and kind of packages most desirable for containing prunes.

THE FLORA OF SONOMA.

A writer in the Petaluma *Courier* gives some interesting botanical notes on the Flora of Sonoma County, which is in many respects a representative part of California. The writer divides the region under notice into six distinct tracts, or belts, each having its own peculiar flora.

The first of these tracts is the salt marsh region bordering upon the bay and the salt water creeks and inlets, while along the ocean the maritime rocks and sands, which form the immediate shore, constitute a second and very different region. The plains and the lower slopes and unwooded summits of the hills constitute the third region; the steep hillsides covered with chapparal are the fourth, or chapparal region; the ravines of the higher mountains form the fifth, and the redwood country a sixth region. In all this, however, there are few lakes, rivers, or fresh water meadows, such as are known in the Eastern States.

The salt marsh region is not very peculiar, and we have several plants well-known in Europe, among which are the Potentilla anserina (goose grass), and the Statice Limonium (marsh marigold). Among distinctive plants are the Grindelias. The second district is the home of a very beautiful and abundant flora. Everywhere beyond the reach of the tides, the slopes are covered with yellow mosses of the Tree Lupines (L. arboreus), the purple L. Chamissonis, the Nootha Raspberry, with its large white flowers, and the red-flowered Salmonberry. On the sea sands, among many other noteworthy plants, we shall observe the yellow and buff Abronias, or sand verbenas, and another purple-flowered species; the crimson thistles, the purple Mesembryanthemums, and yellow clusters of Sea Marigolds, and of different kinds of Sedums in masses of bloom.

Coming to the third section, we shall find that it contains the largest number of characteristic plants, and occupies most of the southern part of the county. At this season of the year (August) everything, except the groves of evergreen oaks and laurel, appears brown and dry, though there are occasional patches of various compositæ and other weedy plants, with a few Asters and Golden Rods, but the general effect is one of sterility and desolation. Next spring, however, all this will be changed. April, May, and June will see the whole country covered with tender

grass, springing grain, and masses of brilliant bloom. Among these we shall see the Eschscholtzias, or Yellow Poppies, the Yellow Violet (V. pedunculata), the many species of Lupine, particularly the annuals (L. nanus and L. microcarpus), and the perennial (L. Douglasii), the many California clovers (Trifolium). Many species of Hosackia appear; the Clarkias, and the brilliant Eucharidium, with its showy scarlet blossoms, the purple Godetias, the many Layias and other showy compound flowers, the Gilias, Downingias, Phacelias, several species of Mimulus, of Painted Cup (Castilleia), and of the allied genus Orthocarpus, whose curious and showy flowers appear in great profusion, and the Brodiæas, those little lily-like plants whose purple umbels appear everywhere among the grass. Most of these plants are annuals, or bulbous rooted, and the season closes by the first of July.

The fourth, or chapparal district, occupies gravelly and sterile slopes. The Manzanita (Arctostaphylos) predominates, in clumps. It blooms in January and later. Its pale pink and white urns have a delicate beauty, which once seen can never be forgotten. In February the Madrona tree (Arbutus Menziesii) is laden with white clusters, and after it comes the Chamiso (Adenostoma), in white spiræa-like blooms. By July the Photinia (Heteromeles arbutifolia) becomes conspicuous. These are all evergreen shrubs. Among the herbaceous species are Hosackia glabra, and the Woolly Castilleia.

The fifth region consists of the higher mountain ravines, and some of the species are identical with those of New England. Coltsfoot and Solomon's Seal, for instance, are found here. Species of the Trillicum, the Gooseberries, the Currants, Columbine, and Dicentra add to the charm of the scenery. Ferns are numerous. Among bulbs the Frittilarias and Lilies are conspicuous.

The sixth, or redwood region, presents the general characteristics of an evergreen forest. Some peculiar California trees are found here, such as the Torreya, the Cerocarpus, and the Castanopsis (Chinquapin). Among the shrubs are a delicate wild rose, an evergreen Huckleberry, and along the streams the splendid and fragrant California Azalea (Rhododendron occidentale). Of the lesser plants are the Yellow Violet, the fern-leaved Vancouveria, and many other lovely flowers. The true time for visiting the redwood region is in the later days of June.

THE HORTICULTURAL EXHIBIT AT THE MECHANICS' FAIR.

It is generally known by our readers that the State Horticultural Society agreed to take charge of the exhibits of the fruits, plants, and flowers, at the Mechanics' Fair this year, that being a well known institution of merit. The Fair has attracted much attention, and the wisdom of the Horticultural Society directors in accepting the charge of these departments has been amply justified. The exhibits are acknowledged to be better than in previous years, though we can not but wish that more plant-growers and orchardists were represented. It is always a question of time in these matters; the public taste must be educated up to such a level that a quick appreciation of horticultural exhibits is universal. Some time we *must* have our lily shows, and rose rivalries, and ardent, but amicable comparisons. Speed the day!

In the present exhibit, the plants and cut-flowers are in the well-known horti-

cultural annex, where ample space is provided. At one end the plants are grouped on benches and tables, or in island-like mounds of foliage, about which merry people pass and repass continually. By far the greater part of the annex is laid out as a garden, with lawn, shrubs, bedded plants, etc. At the further end, by the lesser entrance, there is a huge pile of not very satisfactory rock-work, down whose dark slopes a stream sparkles. Near by is a fountain made at intervals opalescent by colored glasses, and a powerful reflection near the roof.

This must serve as a general picture. To particularize somewhat, we shall find, on entering through the main gateway, that J. T. Murphy has a choice exhibit of Ferns, Palms, and Araucarias, rising in masses of green against the walls. Next comes E. Meyer's exhibit of foliage plants, of Lilies, Begonias, Cape and Chilian bulbs, Ferns, etc. It is a miscellaneous collection. F. A. Miller's exhibit comes next, and is in some respects similar to the preceding, but has some choice plants, such as Pandanuses and variegated Pine-apples. The largest and finest exhibition plants on the coast are probably those stately Palms, Cycads, etc., at Woodward's Gardens, and before described in this monthly. It is therefore sufficient to say that the best of these were exhibited. A fine Adiantum Farleyensi and a choice Pandanus Veitchii attract deserved admiration. Anthuriums, Cissus discolor, and many good foliage plants are to be seen. A number of amateur exhibitors have aided both in this and in the cut-flower department.

The cut-flowers occupy several ranges of tables. They are brilliant and beautiful, attract much attention, and give our visitors some idea of what California can do in that line. We must, however say, with sorrow, that the flowers in this department are not properly labeled. (This fault partially applies to the plant department also.) Gladioli, Dahlias, Roses, etc., are worth the greatest care to keep labeled at shows, for the general public is thereby educated. The editor of this monthly has grown tired of answering questions propounded by anxious students of the cut-flower and plant tables. This is the way it goes:

"O, that is a lovely rose—just what I want to buy next winter. Do tell me the name. How horrid, they are not labeled!"

"What is that charming vine, red centre, white pocket-like affairs? I must have one like it."

E. Meyer, Thos. Saywell, W. Meyer, and F. A. Miller, supply most of the cut-flowers on exhibit. In quality and variety, the Roses and Gladioli have been magnificent.

The fruits and other horticultural exhibits are on the main floor. The State University of California makes a display of great value. It embraces over sixty varieties of cereals, grown at Berkeley, Alameda County, and without irrigation. Some of the specimens are very choice indeed, and represent what the bay coast soil of California can produce. The display is of great value to the agricultural classes of the State, and the only source of regret connected with the Exhibition is the fact that all of our farmers have not seen it. Some sheafs of bearded and plain wheat are studied with much care. The governing idea in the experiment has been to ascertain the cereals best adapted to the various grades of soil, and also to show the kinds of grain that will ripen with the least moisture and withstand the longest sieges of drought.

The collection not only displays the grain in sheaf, but also samples bottled and labeled.

The exhibit of rare plants made by the University includes specimens of medicinal, economic and food plants of probable value to the Pacific Slope. Among the Cinchonas are several of the best varieties, such as Cinchona calisaya (yellow Peruvian bark), Cinchona officinalis, Cinchona succirubra (red Cinchona), and others. These are in pots, and look healthy. They were grown in the propagating houses at Berkeley. An interesting plant is the melon tree of South and Central America (Carica papaya). This is now cultivated in Southern France for its fruit. The famous Sour-sop (Anona muricata), and an allied species, the Custard Apple (Anona Cherimoya), bid fair, if properly sheltered, to ripen fruit at some future period. These are among the most delicious fruit of the tropics. The Vanilla bean is to be seen clinging to a block of wood; the caper bush, or rather vine (Capparis), begins to throw out its trailers; here, too, are the Tamarind, the Coffee, the Carob, the Pepper vine, and the Taro, which forms the national dish of the Sandwich Islanders. A new oil plant, said to be highly profitable, is the Guizatea Oleifera. Bamboos, sugar canes, sorghums, millets, etc., complete the exhibit.

W. B. West, of Stockton, has devoted much time to the fruit exhibit, and it is being enlarged daily. At present D. A. Learned, of Stockton, exhibits seven varieties of wine grapes. One bunch of seedless Sultanas weighs four pounds. R. B. Blowers, of Woodland, shows seven varieties of table grapes, and two varieties of seedless; also seven varieties of wine grapes, and admirable specimens of raisins cured in the open air and by driers. W. Cantelow, of Vacaville, shows five varieties of table grapes, and E. R. Thurber, of Vacaville, exhibits figs and peaches. W. H. Jessup, of Haywards, has on exhibition seven varieties of plums. G. W. Hinkley, of Winters, exhibits choice table peaches. W. W. Smith, of Vacaville, displays eight varieties of canning peaches and eighteen varieties of seedlings. F. A. Miller exhibits peaches grown in the western suburbs of San Francisco. J. Strentzel, of Alhambra, exhibits currants known as the Black Zante Seedless, and also some pears. W. W. Brier, of Centreville, is an exhibitor of apples. M. Gillam has a collection of apples, plums and peaches. J. R. Crandall, of Auburn, exhibits three plates of seedling plums, the fruit being known as Crandall's Mammoth. R. O. Tripp, of Woodside, makes an excellent exhibition of apples. A. T. Hatch, of Cordelia, has thirteen varieties of plums, and also pears in the collection. J. Shinn, of Niles, exhibits peaches. Wm. Boots, San Jose, exhibits twenty varieties of plums. F. Rhoda, of Fruit Vale, is also an exhibitor of twenty varieties of the same kind of fruit. L. P. Rixford, of Sonoma, displays fifteen varieties of apples and four varieties of excellent pears. A. T. Hatch, of Cordelia, is the only almond exhibitor in the department. He has been very successful in raising almonds, and offers a fine collection for the inspection of the fair-going public. A valuable exhibition of pure olive oil is made by Elwood Cooper of Santa Barbara. G. C. Swan, of San Diego, presents a display of lemons and oranges. Southern California has also an exhibit of oranges, lemons and limes by J. W. Wolfskill of Los Angeles. A growing banana in bloom is included in the collection, and samples of South-Sea Island Bread-fruit are shown.

Editorial Notes.

Some New Aquatic Plants.—People often ask about aquatic plants. Aside from those ordinarily known, there are many of recent discovery, now coming into use in Europe. Among these are Salvina natans, a floating cryptogam of much grace; Azolla pinnata, an exquisite floating plant which looks like green lace; and Trianæa Bogotensis, with leaves like a floating sponge.

The Scarlet-flowered Gum Tree.—We have several times spoken of the great beauty of this, the most ornamental of the Eucalypts (E. ficifolia). In Baron Von Mueller's great monograph of the Eucalyptus family the tree is described and illustrated at length. It stands drought and hot winds, and thrives on poor soils. There is hardly a hill-side in California where this beautiful tree will not succeed. It grows fifteen or twenty feet high, and blooms profusely and flowers when quite small. When in bloom the tree resembles a "huge mass of fire," having massive bunches of orange-scarlet flowers.

A Bed of Lilies.—There are, in our garden, two walnut trees which stand twenty feet apart, and one of them is bearing several dozens of nuts this year. Between the trees, and shaded on one side by a low hedge of Clianthus punicens, on the other by the low wall of a greenhouse, is a bed of lilies of Japanese varieties, with pansies and forget-me-nots to carpet the ground beneath them. Earlier in the season there were some plants of the well-known bleeding heart, and some old-fashioned peonies here, but they are past flowering now, and seem to look in a sort of amaze upon their brilliant surroundings. The fragrance of the lilies, as one sits here, in the midst of bees' murmur, and many glad sounds intermingling, seems the charm of charms. In a close room lilies are laden with too much fragrance, but here, this quiet and golden afternoon, it is so happy a thing to sit in the midst of lilies, that I am tempted to swing a hammock from tree to tree to-night, and to sleep and dream swung by light winds over the bells of white and scarlet and gold.

Vines for Porch and Balcony.—In our climate wide porches and balconies such as prevail in the Italian villa style are in every respect admirable. Then we can have an abundance of choice vines. It used to be said that vines were not well adapted to the climate of California, but further experiments have shown the fallacy of this view. The perennial vines grow in perfection here, annual vines also thrive, but the range of perennial vines is so great that the annuals are much neglected. Within sight from where these lines are being written is a Trumpet creeper (Bignonia radicans), which is four years from the seed. Its two branches are each an inch in diameter, one foot from the ground, and the vine has completely covered a ten foot post, and spreads out at the top over a space of trellis work which is several feet square. It is in full bloom, being covered with masses of orange-red flowers. This is the third year that it has bloomed. Among the other vines on this trellis of which we have spoken are Wisterias, Passiflora edulis, Banksia roses, old English Ivy, some perennial Convolvuli, and Akebia quinata, which is perfectly adapted to this purpose.

A Good Rock Garden.—A writer in the *London Field* thinks that we are still living under the influence of bad and weak systems of gardening. (If that is true in England, where so much is being done, how forcibly it applies to much of the so-called gardening of the Pacific Coast!) Among the things denounced by this nameless writer are the old mixed border with poor flowers, and the wretched rock-work made like a rough wall. But, as we are afterwards told, there is an Alpine rock-garden worth copying. It is of low mounds of soil, with rock cropping out of them, and is covered with rare Alpine plants, of upright growth, with plenty of intermingling trailers. In a hollow close by is a choice bog-garden, for such things as the scarlet Cardinal flower, and choice Sarracenias.

Variegated-leaved Lilies.—Lilium longifolium albo-marginatum is the name of a Japan lily which has proved worth cultivating. We have tried it in pots, but not yet in the open borders. The flowers are white and of good size, but the chief beauty is in the leaves, which are bordered with white and are more abundant than is common with lilies.

Ornamental Gourds.—We have not yet seen, anywhere in California, a good or even passable collection of the ornamental gourds. Much pleasure might be obtained from a good collection, and, as this is the season at which they would be at their best, a few notes on varieties may prove interesting. The Pear-formed Gourd is a small but very showy kind, varying much in color. Generally the lower portion is dark green, and the upper part is yellow with cream-colored stripes. Bryonopsis laciniosa has scarlet fruit striped with white. The Serpent Gourd is several feet long and twisted or coiled like a snake. Cucumis dipsaceus has pretty flowers, ornamental fruits, and a graceful habit of growth. The Balsam Apple (Momordica balsamina), has pear-shaped fruits which open at the lower end, showing orange and scarlet, and are very attractive to the eye. The Striped Apple Gourd is one of the best for a large trellis. Besides these we have the Dipper Gourd o the South, so common as a shelter over the well, or milk house, and, for the field, the large tough kind, which does well in this State. There are many other both large and small varieties of gourds, and some of them are worth growing for small cups or receptacles of various kinds. We should like to see more planted in the warmer parts of California.

Cocoanut Fibre.—Lately we noticed in some private greenhouses that much use was made of cocoanut fibre refuse. This refuse fibre is really vegetable matter partially prepared for fertilizing purposes, and for use in compost, much like leaf mould. Soft wood cuttings root well in this substance. If used in a bed for plunging pots it is not nearly so durable as tan-bark. Its uses, however, as a mulching for garden beds can hardly be overestimated.

Fir Tree Oil for Insects.—Recent experiments show that the oil of fir trees, used at the rate of one pint of oil to eight gallons of water, and applied with atomizer or syringe, kills aphis and other insect pests of the garden and orchard. If used for scale bug, mix two pints of oil with eight gallons of water. This also kills the gooseberry caterpillar, and should be tried upon the currant worm and other pests.

Flowers for Shady Places.—People in cities want flowers, even though the only place for a garden is between narrow walls. We are almost daily asked what plants thrive in partial shade. Fuchsias, Pansies, Violets, Lobelias, and Forget-me-nots, will succeed in such places. Centaureas, Begonias, variegated Geraniums, Achyranthuses, and Alternantheras, are good foliage plants for shaded situations.

The Origin of Pyrethrum Golden Feather.—From a letter addressed to the *Journal of Horticulture* by G. Pinder, Vicar of Harford (England), the origin of Pyrethrum Golden Feather is given as follows: A gardener in Golmanchester, near Huntington, named Ebenezer Sevard, discovered it in the modest garden surrounding his cottage. He showed it to Mr. Pinder, who advised him to carry it to Messrs. Henderson & Sons, horticulturists, which he immediately did. In a little time the plant of Ebenezer Sevard spread throughout the world, and it still holds an important place among those which serve for garden decorations.

A Good Shrub.—Escalonia rubra, a glossy-leaved shrub with red, tubular flowers, is a particularly desirable shrub. Mr. H. P. Livermore, of Rock Ledge, Oakland, finds it of easy culture, and most useful for lawn and hill-side decoration. The plant belongs to the order Saxifragaceæ, is a native of Chile, and is named after Escalon, a Spanish botanist. It is perfectly hardy in this State, and often grows twelve or fifteen feet high.

Plants Found in the Neighborhood of Reno.—Prof. Lemmon, who has lately been visiting Reno, contributes some notes on the plants of that locality to the Reno *Gazette*. He says:

One of the most striking plants is the Mexican poppy (Argemone), a large, prickly-leafed plant, with large white flowers. It grows in sandy places, and from one to two feet high, yielding large prickly pods.

Another beautiful plant is from one to two feet high, and has large yellow flowers terminating the white branches. The petals, or parts of the flower, are five in number, lanceolate in shape, and a bright lemon yellow — shining like satin — hence called "satin flower," by botanists Mentzelia. Another yellow-flowered plant along the streams, and liable to be confounded with this, is an Œnothera, or "evening primrose," but the large petals are four in number, broadly ovate in form, and they open toward night, closing and withering before noon of the next day.

The "desert plum" of the Nevada basin is represented here in small patches of prickly bushes from three to six feet high, seldom maturing fruit, but which when ripened forms a curious connection between the plum and peach. The fruit opens on one side and sheds the seed at maturity. This plant is named Prunus Andersoni, in honor of Dr. Anderson, of Santa Cruz.

A common alkali shrub, once called Fremontia, in honor of the discoverer, Col. Fremont, is of a light pea-green color, with fine slim branches and worm-like spikes of flowers; leaves fleshy, awl-shaped; branches often bearing spines. In seasons of scarcity of forage cattle eat this plant closely to the ground. Botanical name, Sarcobatus.

Another ashy-gray shrub called "grease wood" is striking in the autumn of the year on account of the bright red, large flat seeds it bears in long spikes at the ends of the branches. This plant, called Grayia by botanists, is dedicated to Dr. Asa Gray.

New & Desirable Plants.

[We shall glean from our exchanges and correspondence, notes on plants either new, or of promise in our climate. Our nurserymen are invited to send notes on any interesting plants received.]

Rhododendron Keysi.—This curious Rhododendron is figured in the *Garden* for July 24th. It differs much from the ordinary kinds in cultivation, the flowers being tubular, resembling some species of Vaccinium. The tube is bright orange, and the petals deep red.

Ceropegia Elegans.—This represents a remarkable class of climbing plants. Some species are from South Africa, others from the East Indies. The flowers in C. elegans have a white ground, with purple-black mottlings and long black hairs. The leaves are much like those of the Hoya carnosa.

Senecio Speciosus.—The *Florist and Pomologist* describes a pretty South African plant, cultivated in England last century, but afterwards lost track of until recently. It is a native of South Africa, and is a greenhouse perennial in England, but would thrive out of doors here, flowering during summer.

There is a large tuft of leaves from which tall flower-scapes rise. These terminate in corymbs of large magenta-colored flowers.

FREESIA ODORATA.—This is a bulbous plant well adapted for growth for cutting purposes. The flowers, pure white with a dash of orange in the corolla, are carried in a one-sided spike on slender stalks. Their peculiarity is in their delicious fragrance, of itself a sufficient charm to secure the popularity of this plant.

ANTHURIUM ANDREANUM wins golden opinions everywhere, and is called the finest introduction of late years. It is a plant of tufted habit, the slender petioles support a cordate oblong, glabrous blade, dark green above and paler beneath. The slender flower stalk bears a curved spadix of whitish color which is surrounded by the cordate spathe, of most brilliant red sealing-wax color, curiously ridged and wrinkled. This plant was found in Colombia, South America, in 1876, and the first successful importation into Europe was in 1878. The flower is in good condition for over four months.

WAGATEA SPICATA.—The director of the Kew Garden has distributed to the English Colonies of Guiana, Jamaica, and other places, seeds of a plant of which the pods contain as much as 15 per cent. of tannic acid, giving them a value of the first order for tanning purposes. This plant, Wagatea spicata, Dalz., a spiney shrub of the family Leguminocæ, has handsome flowers and elegant foliage, originally from Concan. These seeds were sent to the English Government by M. Woodrow, Superintendent of the botanical garden at Ganesch Khind (Poona), British India. — *Translated from the L'Illustration Horticole.*

Pomological Notes.

A CHOICE NECTARINE.—We mail you to-day a few nectarines, and would be glad to have you give the proper name of the variety. There are several named kinds in cultivation in this neighborhood, but this sort is quite distinct from any of them, nor have we been able to identify it with any variety described in the books. The tree is a compact grower with abundant and close set foliage; leaves with semi-form glands; flower large; a moderate bearer. The specimens sent are fair samples of size and shape of fruit; larger ones could have been found. These will average over a quarter of a pound each, which is not at all uncommon with this variety. The color of the fruit is green, with a little red on the sunny side; quality superior to any other variety with which we are acquainted. It is especially good for preserving or canning. A marked character is found in the kernel, which is sweet, as in some kinds of apricots. The stock is supposed to have been brought here from South Carolina, and has been grown for a number of years under the name of Mammoth. Should it be thought a new variety and worthy of diffusion, we would be willing that you should say to the readers of the HORTICULTURIST that we will send a few scions to any who wish to try it and will send their address and stamps enough to pay postage and packing. Very truly yours,

PARISH BROS.

SAN BERNARDINO, CAL., Aug. 20, 1880.

[The nectarines arrived, but were not in good order. One was sufficiently sound to afford a taste. It is one of the best nectarines we ever tasted, and is worth propagation. We advise our readers to write and procure scions at once. We can not yet be sure about the variety. It is somewhat different from the white nectarines we have heretofore seen, being free from the slightly bitter and sour taste which many of them show, and is perfectly free-stone. The pit is shaped differently from other nectarines, much resembling a peach. It is quite probable that some accidental seedling has in this case been brought to light. Next year we hope that Mr. Parish will send some specimens to the State Horticultural Society.—ED. HORT.]

Reviews and Exchanges.

THE ENGLISH GARDEN.—

We have often spoken of the beauties of this artistic journal. Merely to show its continual overplus of good things we observe that the last three numbers have contained colored plates of Calathea (Maranta) Warscewiczi; of Hymenocallis Macrostephana; and of Moss roses, the last an elegant bouquet of these favorite flowers. These colored plates are of themselves worth the price of a copy.

THE FLORIST AND POMOLOGIST for July. Thos. Moore, Editor. London, 23 Paternoster Row. E. C.

The current number of this standard flower and fruit monthly has two brilliant flower plates; one of Anthurium Andrèanum, with its irregularly corrugated, intensely scarlet, spathe; the other of three choice new yellow Picotees. We notice in the editorial department a note on our creosote plant, Larrea Mexicana.

BULLETIN OF THE TORREY BOTANICAL CLUB. Vol. 6.

This is the well-arranged index of this valuable little publication, and covers the time from January 1875 to December 1879.

Vick's Monthly for August. We are always glad to notice this neat monthly because it certainly aids in disseminating garden lore. The present number has a new midsummer cover. The colored plate represents the beautiful Punctatum Lily.

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Contributed Articles.

FACTS ABOUT FRUIT.—No. 4.

By M. P. OWEN, Soquel, Cal.

What we need most to guide us in the right methods of fruit growing is *facts*, and not *theory*, though we will not discard theory altogether, for we frequently arrive at valuable facts by following theory awhile. But it is not safe to venture very much on theory, for even facts sometimes lead us astray. But some people put forth theories for facts when they are instructing the public, and thereby do a good deal of mischief frequently. Now, considering this a sufficient preface, I will undertake a friendly criticism on some theories promulgated in the September HORTICULTURIST, and after that, I will give some facts on fruit.

Now the first criticism will be on friend Shinn, an intelligent fruit grower of an interior valley, who has come to the conclusion that altitude makes all the difference in the peach curl. He says "that the severity of the disease seemed about in proportion to the altitude." But friend Shinn modifies the position taken by the other gentleman, and very properly advises observations to be taken on the subject. Now that is just what we want—close, critical, intelligent, and extended observation—then we may arrive at correct conclusions. Now, observation, during the last twenty-five years, has led me to believe that altitude and soil has but little to do with the leaf curl, but that the state of the weather has *all* to do with it. Well, let us look at the altitude theory. The interior gentleman said those in the valley were curled, while those one hundred feet above were not. Well, if we stop there, we might very reasonably conclude that altitude made the difference. But suppose you take some observations in my orchard, and then take the round with me down close along the bay, and over the sand hills, and through the rich valley lands, and then over the mountains into Santa Clara Valley, about San Jose, and back by way of Los Gatos, over the mountains again to Santa Cruz, and around back home. Now in this circuit we have gone as far east as San Juan and Gilroy, and have passed over many different soils, varying from stiff clay and adobe to gravel and sand, and almost pure sand; and varied in altitude more than 2,500 feet, and still in the western part of the country we get up more than 3,000 feet. Well, what do we discover in this round? Why, that

there is no perceptible difference in the extent of leaf curl in all these variations of soil, altitude, and climate. I will mention the fact here that there is a good deal of difference in climate between the different locations mentioned —near the coast being uniformly cool, with foggy mornings, while the higher regions are uniformly warm, without fog, with few exceptions, and clear sunshine nearly all the year round. Now on the strength of the above observations, I conclude that we would be troubled but little with leaf curl if the weather should be right for a healthy growth of foliage at the right time, and as we can not regulate the weather, we must select such peaches for our orchards as will stand the cold without curling, and get along with them, and leave the more tender varieties to those of warmer regions. But with care we will likely get a goodly number of excellent peaches that will stand the cold without curling.

WASTE OF GRAIN.

By Prof. George Davidson, U. S. Survey.

Being stationed in the wheat plains of the Sacramento Valley (Yolo County), I was much struck with the waste of grain after the "headers" had done their duty. I found one large field excessively rich in waste wheat, but learning that it had been fiercely beaten during the "norther" which blew so persistently just before the ears filled, I did not gather the waste for measurement. But upon a broad field where the remaining shafts of wheat showed that it had sustained no such damage, I measured a square yard of surface and gathered all the grains of wheat that were lying upon it. There were 936 grains of wheat which weighed 171 grains, or at the rate of 118 pounds to the acre. Now such a loss to the small farmer (perhaps paying interest and fighting an uphill fight), is a serious matter, whilst to the large holder it is not to be over-looked. In the end it comes upon the consumer who pays for losses, bad debts, etc. All are interested in such wastefulness, and one naturally wonders whether there shall be no means devised to save this large loss. Of course part of this waste goes to feeding the stock which is turned in upon the stubble fields, but I am satisfied from personal examination that a very small percentage is saved by this means; the stubble fires swallow up the larger part.

[This is an important subject, and we hope our exchanges will discuss it further. We also note that horses and cattle trample such waste grain into the loose soil, and seldom are able to obtain it, even where there are no fires. Sheep do better in this respect.—Ed. Hort.]

FRESNO NOTES.

By Miss M. F. Austin, Fresno.

The gentle touches of autumn's hand are upon us. Yellow leaves lie under the trees; the meadow lark poised on the bending twigs, renews the gay song of spring after his summer rest; the plains are dusty and brown and a strange mirage deceives the vision. The autumn fruits are rich with imprisoned summer sunshine. Now is the time of the vintage—the glad reward of the year's toil. The cold spring retarded the bursting leaf and fruit buds of the vines, which has delayed the season of picking and curing the grapes for raisins, but now, two weeks later than usual, the pickers toil daily in the vineyard.

In America will be found none of the simple, peasant joy of the Italian vintage, and consequently we have lost

much of the beauty and poetry which attach themselves to this season in the Old World; but the natural beauty of the leaf curling tendril, and hanging fruit, still remain, and the warm sun cures the perfectly ripened bunches as surely as in old Spain, converting the sugary juice into the richest of jellies.

The yield in the Fresno vineyards will be larger this year, and I do not doubt but the future years will develop these barren plains into fruitful vineyards.

It is not true, as has been reported, that we have the phylloxera in this county. No trace of the destructive enemy has been found. Were it true we feel that we should be masters of the situation in our ability to flood the vines.

With the gathering of the grapes and the pomegranates ends the season of fruits; then follows the legitimate fall and winter work, for in California farming there is no rest-season.

During the winter, ground must be prepared and vines set out; the old vines are to be pruned and the vineyards flooded, to be followed by the swelling buds of spring, the promises of summer, and the fruits of autumn once more, and so the round is completed and one more year added to the milestones of our lives.

WONDERS OF NEW ZEALAND.

By S. M. Curl, M. D., North Wellington, N. Z.

The wonders of New Zealand are known to very few persons who have not lived and traveled in it, and of those who are dwellers therein comparatively few know how much there is to study in the country they inhabit. Its flora is different from that of most other lands, its fauna is very singular and distinct, and its aboriginals, who call themselves Maories, are very peculiar. When they (the Maories) arrived some thirteen or fourteen generations ago, on its shores, and landed from the six canoes which had brought them, they found dense tangled forests of enormous trees tied and woven into an almost impenetrable mass of running and binding cords under shrubs, ferns, and a thick and varied undergrowth. They found giant birds larger than ostriches, which they named Moa (Dinornis giganteus), their height being ten feet, stalking about the margins of swamps, and among bushes that lined the banks of the streams. They found a smalll black rat (Musratus), and no other mammalian quadruped, but several kinds of wingless birds, called by them Kiwi (Apteryx Australis), some species of lizards, but not one snake. They brought with them in their canoes seed of the Karatea (Coronocaryhs lœvigata), the Kumara (Convolvulus batatas), the Taro (Caladium esculatum), and several other seeds, and these they planted, and used for food. They killed the big birds and the rats for food as they did also the wild pigeons (Columbus spadicea), the parrots, and the wood hen (Rubus Australia). They caught eels in the rivers and swamps, sharks and other fish in the sea and dried them, dug up the fern root (Pteris esculenta) and stored it, chopped down the forests with stone axes, burned them, cultivated the ground with stone, wood, and bone tools, and grew the Kumara and Taro therein. They built houses and fortifications with timber chopped into planks with stone implements. They wove mats out of flax (Phormium tenax), and birds' feathers for clothes, made baskets, fishing nets, eel traps, and weirs; shaped spears and tools of wood; cut stone of the hardest description into axes, clubs, ornaments, and other things; chopped down trees,

and hollowed out canoes which were sixty feet long and three feet beam. We have thus a study of man in the stone age before bronze and iron were known.

This strange land is worthy of study. To those interested in the distribution of plant life what a field for careful investigation it offers, and then what a view of the past is presented in the flora of these islands! A noble palm tree is growing thus far to the south, the Areca sapida; several myrtles (M. bullota, M. Ralphii, M. obcordata, M. pedunculata), several other myrtaceous plants (Metrosideros, Leptospermum), are numerous; but there are no Eucalypts, which so prevail in the flora of Australia, Tasmania, and New Guinea, nor Acacias which also there abound. But upon our mountains, and thus within our alpine flora, are the Gaultheria, the Seucopogon, the Gentiana, the Myosotis, the Dichondra, the Solanum, the Fagus, and others which are also found growing in Tasmania, and in Australia. The Cordylines are also found in these countries, conjointly thus proving that in the geological ages these countries were parts of our continent, and the plants common to each could thus spread from a common centre, and yet there are no Marsupials in New Zealand, although they are so fully distributed in other parts of Australasia. In Australia a giant bird, the Emu, still lives, but our Moa has been quite extinct, although it was once so numerous that its tibia, and femur, and other bones are found imbedded in the rock in great quantities. The forest trees and other individuals of the flora are also disappearing; the Maoris before the white colonists came, had destroyed vast tracts of forest by fire, and otherwise in the higher lands either mountain sides or high plateaus. The species of Fagus have under them large accumulations of vegetable debris—leaves, bark, etc., and in the summer, when it is dry, a fire will run through it with great intensity, killing the trees and shrubs and causing them to fall, and the subsequent year's fires will burn up the trunks, leaving the ground bare, to be afterwards covered with Karetu (Hierochloe redolens) and other grasses or herbage. Thus hundreds of miles of country have been laid waste every few years. The writer of this letter has ridden through miles of country with the charred trunks and stumps of the burnt trees, and not only are thus disappearing many forest trees, but numerous other plants also.

There is a piece of country extending forty miles in one direction, by a width of fifteen miles, the indigenous vegetation of which has greatly changed in sixteen years. Upon it grew large quantities of holy grass (Hierochloe redolens) which used to feed and fatten the cattle, sheep, and horses grazing upon it. Now they have killed it by constant nibbling, and it has been replaced by other grasses or herbs. It was a very good grass for live stock, but it is now seldom seen over this piece of country, and then only in solitary patches instead of generally diffused. In the interior and ungrazed districts this grass is still plentiful; many kinds of fern also are disappearing. The writer used to find an Asmundum widely scattered over the country above referred to, but now it is not to be seen, and in its place are the Arundo Australis, Phormium tenax, Leptospermum scoparium, and other plants covering thousands of acres, but clearing, plowing, and even inclosing and grazing, has caused the greater part of this to disappear. The Cordylines, also, which grew upon these

lands, are getting much scarcer. A Drosera and a Mentha, and different Orchids, used to be abundant, but they are now hard to find.

But great as are these changes produced by man's intervention, how much greater were the changes which volcanic action, and other agencies, has produced here in the past? In the interior of the North Island, after the traveler proceeds from the coast line over some fifty or sixty miles of country, during which he has been traversing lands that are composed of sea deposit and drift of aluminum lying tilted from the coast line to the interior plateau, he finds that he has gradually been ascending until he has reached an elevation of between two and three hundred feet, and the drift and sea deposit has decreased from hundreds of feet in thickness to a few inches. Then suddenly he begins to encounter lava blocks, pieces of trap, and scoria, and these increase as he sees rising before him a mountainous ridge, with its tops above the snow line. These mountains terminate abruptly southward, in a rugged mass called by the Maoris Rua-pehu. It is an extinct volcano, and the writer while exploring and studying the conformation and neighborhood, saw every where the evidences of the intensity of the last eruptions from this mountain. This mass now lies so calm and still under its snow fields, which melting as they forced their way down to the plains, gave rise to the Waikato River which runs to the north, and the Wangachu River which rolls to the south. This mountain had at that last out-burst ejected enormous masses of rock of many tons weight, which had fallen six or seven miles from this crater, while streams of lava, pumice stone, or cinders and ashes had covered the country for twelve or thirteen miles, and as a finale, the whole side of the mountain or crater had been forced over, and with its accompaniment of highly heated steam, gas, sulphur vapors, and molten rock, all acting under intense pressure, the whole fell outwards and covered a space of many miles in length and width, at which time ravines were torn open, and other violent effects were produced, which left the plain at the foot of this mountain a desert scarred and distorted to this day. The centre of violent volcanic action then left this cone of action, and passed about three miles to the north, moving along this ridge, and threw upon another cone, the Ngaruohou, which has since been smoking, as do certain other parts of this ridge, until the Tongariro is reached, which constitutes the northern end of this volcanic range. Since the great eruption and disruption of Rua-pehu, hundreds of years ago, no such violent catastrophes have been again experienced, and now along the shoulders of this Tongariro chain, an evergreen forest extends up to the snow line with little rills and streams of clearest water coming down from the snow fields every few miles or less, and emptying themselves into the upper Waikato River, while on the other side of the valley lie the Kai Manawa hills, upon the borders of which the old drift and sea deposits ran out.

While now botanizing among the present forests of these mountains and seeing not only the giant trees of this time, but viewing the generations of trees of the past that have fallen and given place to those whose roots now embrace them, it is a surprise to come upon the lava and other masses of rock half hidden in vegetable soil, and to be thus recalled to a sense of what was the volcanic energy of the past, which now only exhibits itself in the cones of

ruptions we have indicated, and in boiling springs, sulphur exhalations, earth tremblings, geysers, etc., of the country still more to the northward. Thus, while the explorer of this region is gathering his alpine plants from the icy margins, and snow streams of the present, and gazing with admiration at the elevated head of the Phyllodadus, the Fagus, the Dacrydrum Plumosum, and other tall trees, many evidences will bring back to his mind the time when volcanic energy was in action throwing up these mountains, and producing the wondrous changes which have fitted these parts for their present inhabitants, have produced their present conditions, and have left a record to those who will take the trouble to translate it.

PLANTS AT THE UNIVERSITY.

By W. G. KLEE, Berkeley.

As it is perhaps rather early in the season to pass judgment on the various forage plants cultivated at the University, especially the late planted sorghums that are under trial here, I shall postpone this for a later date, and try to give you an idea of what we have been doing in other lines. A good deal of work has been expended on trying a large number of corals, of which the majority were on exhibition in the Mechanics' Fair in San Francisco. I think that a number of them will be of value either to one part of the State or another; but to discuss their merits in the HORTICULTURIST is perhaps out of place, and as a report about them will be published sometime this winter, I shall overlook these also.

The Garden of Economic Plants has received a large number of additions, but owing to a lot of bad seed received from Haaze & Schmidt, Erfurt, there has not been as large an increase as we expected. Four different named species of tobacco were received—longifolia, grandiflora, capensis, and drancaniensis, the latter turns out to be the valueless rustica that is cultivated in the southern part of Europe, where it yields an inferior kind of tobacco, known as Peasants' Tobacco; capensis I think to be almost identical with macrophylla; grandiflora has a very large good looking leaf, and rather pretty flowers, while longifolia I should judge to have too large mid ribs to prove good. The Physalis Peruviana, raised from Erfurt seed, has turned out to be identical with Physalis obscura, the ground berry of the States. It appears a little larger only. The so-called Japanese Tomato, sold also by Haaze & Schmidt, Erfurt, is nothing but a common tomato. Of textile plants, ramie, raised under the two names Boemeria nivea and Urtica candicans, proved to be identical with ramie, raised from seed donated by Mr. Sanders, Fresno. None of these, however, are said to be the genuine ramie, which is called in Haaze & Schmidt's catalogue "Boemeria tenacissinea." Seed of this was sown, but never germinated. The ramie on hand, whether genuine or not, is growing luxuriantly in its rather exposed condition, and there will will be plenty on hand for distribution.

Cotton, owing to the season, is a greater failure than last year. Jute, of which we neither this year nor last have been able to obtain, matured seed, has also been a miserable failure. It is strange that it is so difficult to obtain good seed of this plant. It seemed last season that it was impossible to obtain any in the United States.

Among the oil-yielding plants, the Guizotia oleifera, a yellow composite, is growing very luxuriantly, and prom-

ises an abundance of seed. Sesamum Indicum, the bene plant, is doing better than last year, and also the sunflower.

Of half a dozen species of buckwheats, none seem to be in vigor, and yield equal to a Chinese variety imported last year. The perennial buckwheat, Polygonum cymosum, with snow-white flowers, is almost worth cultivating for ornamental purposes.

Various kinds of mountain rice are again on trial, and seems to be more forward than last year, and may, therefore, possibly mature their seeds.

Of useful trees and shrubs, added, I must name Anona Cherimoya, the Custard Apple of the Indies, that, in spite of its exposed situation, is doing well. Anona murieata, the sour sop, on the contrary, has refused to grow at all, and the Tamarind is considering the situation very quietly. The Rhus Succedanum, or Japan Vegetable Wax, is growing vigorously, and the Rhus vernicifera, or Japan Lacquer tree, is, though late, doing well. Capparis spinosa, the Caper bush, is the slowest thing I have seen growing ; the Papaw is pretty slow also. This might be said of the Japanese dwarf oranges, and of the George Bark, or fever tree.

It is a gratification to see how well our little Cinchonas, or Peruvian Bark trees, are doing planted out in the open ground. Though they are apparently the most difficult thing to grow in a pot, as regards climate and soil, we seem to have found the right place for cinchonas in the garden.

It has been said, and our own experience here seemed to prove it, that young cinchona plants were rather delicate in regard to strong sunlight. The first plants that were put in the open ground were accordingly planted in part shade, under an oak tree. It soon, however, became apparent that those exposed to the most light and heat grew the fastest, and a month after the first another lot were planted out, this time in the full strong sunlight, and those that were perfectly healthy, with deep green leaves, did not as much as show the change from the protected, shaded greenhouse to the comparatively dry and keen winds of our locality. This is especially the case with a specimen of the Calisaya, that has reached three times the size of the same kind in shade, and has not lost a leaf, and from a tiny little plant a few inches high it has from the middle of June to near the end of August grown nearly a foot, though other little plants set out at the same time were not so robust, but they are nevertheless doing exceedingly well. They have so far been irrigated every two or three weeks, but this must gradually cease, so as not to encourage too succulent a growth late in the season and so give the frost the advantage. In regard to the propagation of the cinchonas, I shall later this year make this the subject of an article.

The Carob trees commence to show signs of growth now, but have been very slow all summer. Of other new plants still too small for permanent planting out, we have quite a number —two species of Bamboo, a kind donation from Shinn's nurseries ; Grevillea annulata, a West Australian species, with a pleasantly tasted fruit ; and Macadamia ternata, a proteaceous tree, with a large and exceedingly pleasant nut, generally known as the Queensland Nut Tree. Berberry heteropoda is a hardy barbery from Turkestan. It is of the Mahonia type, evergreen, and is very pretty. Bixa Orellana, or the Anatto, is also among the plants that possibly may find a sheltered location somewhere in the State where they will

thrive. Argania Sideroxylon is a sapataceous tree from Morocco, North Africa, where its fruit is used as food for cattle, and its wood furnishes one of the iron woods. It will doubtless be hardy, as it is said to grow high up in the mountains.

Of the less hardy plants raised here, I must mention two kinds of Coffee; Carica Papaya, the Melon tree ; Persea gratissoma (of the latter we have quite a large specimen in the garden, but it is not hardy here); Achras Sapota; Dwarf Bananas ; Vanilla ; and several others of more or less usefulness. Quite a number of plants have been raised for the future botanical garden, of course still undeveloped. Among such are five species of Rhododendron, twelve of Erica Epacres, and Azaleas, besides a number of tropical plants of special interest to the botanist.

Of hardy trees partly for distribution and partly for specimens, we have raised a host of different kinds. Ten species of oak, among which I can not help recommending highly the English oak, quercus robur. It has outgrown by far any of the American oaks. Cerasus Serotina, or the Wild Cherry, is a handsome and rapid grower and well adapted to our climate. This cherry has for celerity of growth only been surpassed by the Eastern Box Elder (Negundoaceroide). The collection contains fifty Eastern trees and shrubs. Of Japanese importations, through the Agricultural Department at Washington, we have growing, in more or less quantity, Planera cuspodata, a pretty and rapid growing elm-like tree. Homoiceltis is another ulmaceous tree which resembles the nettle tree, but is of erect habit. Hovenia dulcis is a tree said to furnish a pleasantly tasted fruit. What was called an ilex species looks very much like olea japonica. The evergreens are still very small yet. The Umbrella pine (Sciadopitys, Pinus densiflora), Abies firma, and Retinospora species all require another season's observation to justify any expression of opinion.

A large number of plants are grown from seed that has been purchased, but many of the most valuable plants, as the cinchonas, are donations from persons interested in the work commenced. A great many interesting and valuable plants are not found for sale, and especially is this the case with California trees and plants. Donations of these kinds are, therefore, doubly welcome, and they will serve a twofold purpose for both ornament and instruction, as well as being a means of exchange with other botanical gardens.

SCALE INSECTS INJURIOUS TO TREES.

Prof. Comstock, of the Agricultural Department, Washington, read a paper upon scale insects, at the September meeting of the State Horticultural Society. After describing at length the natural history of the Coccidæ, and the leading divisions of the family, he spoke of the forms which occur on this coast, of how the pest is spread, and of the remedies which seem most effective. From this part of his interesting lecture we quote the following :

" Up to this time I have studied fifteen species which infest cultivated plants in sufficient numbers to prove injurious. The most common species of this State is the ' black scale,' which is very abundant on citrus trees and olives, and also infests many other plants, including the deciduous fruits. This agrees with descriptions of a common European species — Lecanium oleæ— and I presume will prove to be the same. If this be true, the species was doubtless brought from Europe on cit-

ron trees. Another very important species is that known as the 'red scale.' This is as yet undescribed. I have, however, in manuscript, ready for publication, a description, including figures of different stages, of both sexes. There is abundant proof that this species was introduced from Australia. These two examples are sufficient to show the danger of introducing pernicious pests with exotic plants. The same thing has happened in Florida. Although the two species just mentioned do not occur in that State, one very closely allied to the 'red scale' has been introduced from Cuba. And another, the most common on oranges in that State, is an European species. All of these insects, however, are not foreigners. For example, there is an undescribed scale common on olive, pear, fig, and other trees in this State which I have good reason to believe has spread in the cultivated trees from the native willows. And in Florida there is a scale which is quite common on citron trees and other plants, which I believe has spread from the gall berry, an indigenous bush very common throughout that State.

"As I have already stated, with most species the adult female is firmly attached to the plant upon which she lives; she is consequently a 'stay-at-home body.' And although the adult males are winged, it is obvious that the pests could not be spread by the flight of that sex alone. The newly-hatched young of both sexes, however, are very active, crawling about from one part of an infected tree to another, or even to other trees which may be near. It doubtless often happens that these tiny creatures are brushed from the trees by persons or vehicles passing, and are thus distributed. Or they may crawl upon the feet of birds, and thus be carried long distances. But the most common mode by which these pests are distributed is by the transportation of trees and fruit infested with living scale insects.

"These facts suggest the following methods for preventing the occurrence of these nuisances. In planting an orchard, choose as isolated a place as is practicable. If isolation can not be obtained, induce your neighbor to join you in your efforts to grow clean fruit. Use the greatest care in purchasing trees or importing buds. Before planting, thoroughly wash all such trees with an insecticide, even if they appear to be clean, for the untrained eye may fail to detect early stages of these insects. Do not visit infested orchards unnecessarily, and above all things do not carry home specimens of scale bugs as curiosities. Watch your trees carefully, and if one is ever found to be infested with scales, remember that no better investment can be made than to burn that tree, and that no time is so good for doing it as the day when it is first found to be infested. The system of exchange of fruit boxes is a very dangerous one. Each shipper should have his boxes marked, and insist on not receiving boxes belonging to other shippers.

"In many cases, however, the pests have gained such a foothold that these methods of warfare are impracticable, and a remedy which will destroy these insects without injuring the tree is desirable. I have begun a large series of experiments with different substances, hoping to find such a remedy. These experiments are as yet incomplete, and I will only state that so far I have found nothing more desirable, taking into consideration its value as an insecticide, its effect upon the tree, and its cheapness, than a strong solution of whale-oil soap. This I apply with a fountain pump or

garden syringe. And as it is impossible, almost, to thoroughly wet every insect by a single application, several are usually necessary.

"Many other substances have been tested, and the results of the experiments will be published as soon as practicable. I will add, however, that I have seen most excellent results in the orchard of V. C. Mason, of San Jose, from the use of the following mixture: One pound concentrated lye; one pint gasoline or benzine; half pint oil; five gallons water."

DELLA.

By Chas. H. Shinn.

A teacher's life is often a hard one, for so many of the minds, which one toils anxiously to awaken and develop, are sadly unresponsive. There are children, however, even among the rudest surroundings, who hunger and thirst after knowledge, and to teach such is a joy untold. I remember a shy mountain child, once my pupil, and so, gentle reader, I have chosen to tell you the tale.

It was the first day of school in the log-house at the Summit District, which was a mountainous region in the heart of the Southern Coast Range. The nearest post office was fifteen miles away. The people, who were settlers on government land, lived, for the most part, by raising hogs, sheep, cattle, and horses, though there were a few vegetable gardens and small hay fields in scanty patches along the streams. The soil as a rule was thin and rocky; the people were poor, and good-natured. The story of how I happaned to engage the school is too long to be told here. But there stood the log school-house that Monday morning in July. It was in a pleasant glen, with brush-covered hills about it. A stream winding through willows passed near the building; a pine of huge size, and several massive oaks, overshadowed it. The house had two small windows, and a doorway wherein no door had ever hung. Some years before, when the district was first formed, the settlers, anxious to educate their children, had met, hewn logs, hauled them to this chosen spot, and reared the four walls, filling the crevices with sticks and clay after the most approved pioneer style. School was taught here for part of the summer, when another meeting took place, oaken shakes were split out, and the roof was put on. The furniture consisted of a log for a teacher's desk (though it much more resembled a butcher's block), and a half-hewn log against the wall, on either side, to serve as a bench for the children. There was no map, no blackboard, no apparatus of any other sort; only walls of dull yellow, and splintered floor on which, in warm weather, the melted resin from the pine shingles on the roof was distilled in whitish, sticky drops.

Now, this, the first day, was one of heaven's best and brightest, and the long walk through shining woods, past curious log cabins with stone chimneys built up outside of the house, had quickened every pulse. The children began to gather from different directions, and drifted slowly into the school-room. There were small, wiry, and half-clad urchins, mountain misses, saucy, coquettish and sunburnt, and tall boys in *vaquero* dress, with a faint suggestion of turbulence in their amusing strides. School was soon organized for work, and two long rows of bare feet swung comically over the rough floor as their owners conned the assigned lessons. The warm sun shone outside; a bird's song wandered through the oak leaves above the door; an im-

patient mustang whinnied sharply at intervals, or dragged his rope with shrill rustlings through the dry underbrush; on the summit of a rocky mound a gray squirrel sat, wise and sedate, taking safe observations of the ways of children. The manifold influences of the summer world made that first school-morning a keen delight.

A little foot crossed the sill; a little sunbonneted, brown-faced girl of nine walked steadily up the centre of the room, and stood before me, with folded hands, and quiet look, so that I smiled back in reply to her fearless way, and waited for her to speak.

"I'm Della, Della Mays," she said, "and I'm sorry to be so late."

She looked tired, and her face was flushed, as if she had run to try to make up for lost time, which she confessed when I asked about it, and said it was a two mile walk to the cabin in the hills where her parents lived, and that a broken fence and stray cattle in the corn-patch had caused the delay.

"But we shall easily make up for lost time," said I, assigning her a seat, and looking over her well-worn books, which had evidently passed through many vicissitudes of fortune.

"O, yes sir, I will try to learn lots," she replied earnestly.

Demure, and womanly, yet at times, on the play-ground, an unconscionable romp, at times, in the school-room, a veritable mischief, Della, as I became better acquainted with her, proved an endless study. She had beautiful fancies, all her own, drawn from the hills and sky, the bright flowers, and the gentle wood-creatures. When once she reached a decision hardly anything changed it; her "no" was like an iron wall, and on the play-ground she ruled girls of twice her age.

In her studies no child could have been more faithful. Attention to minutia was a marked trait; the asides of the school-room, the numberless bits of information which a teacher must continually give, were treasured in her memory. In spelling-class she followed the swift words with clenched hands, and eager eyes. When she gained the summit of her desires, and stood at the head of the class, looking down a line of girls and boys, many of them older than herself, her delight knew no limit, and she sped home with flying feet that night, to tell the story of her triumph.

It became our habit to use a few moments of each afternoon in story-telling, and quiet talk. The books were put away, and the seats drawn more closely together. Sometimes an event of the morning formed an appropriate text; more often, however, we tried to enter the realms of the busy world, and study the work of poet and artist, of prophet and hero. There is always so much that is waiting to be told! Iliad, Odyssey, Nibelungen Lied, and folk-lore of every land; tales of armies marching forth, of cities besieged, of Hollanders cutting their dykes, of Vaudois dying among wintry rocks, of England, roused by the Armada, and one beacon fire from Lands' End to Humber; tales, too, of earlier workers in metals, of earlier tamers of horses, of the earliest writers, orators, and musicians. These, and such as these, are the rightful heritage of children.

It happened, one afternoon in August, that the massive oak beside the door seemed glad with more than its wonted melody, so I told a few of those legends which were born in the childhood of the world, in the dewy dawn of its first delight, when the sons and the daughters of men peopled the woods and streams, the vast hills, and the mysterious ocean, with happy and sin-

less creatures. I told my listening circle of the dryads descending from their leafy homes in the twinkling dusk, to flit back at earliest dawn, and again knot the brown bark over the graceful limbs. I told them tales of the Thessalian woods, in the Golden Age, when children might touch the dryad's tree and see green robes glisten, and white fingers sprinkling dew-drops, or perhaps, if they were very good, hear a sweet voice like the tinkle of fairy bells. Della sat listening with all her soul. I thought how bright and quaint a picture it was as she leaned against the gray log, and the setting sun poured its tremulous gold through chink and cranny, and lit the dark hair, and slanted across the wide room, and filled the atmosphere with soft radiance. The other children were for the moment interested, but as soon as school was dismissed, they went their several ways, heedless, merry, calling back hasty farewells, and plans for the next day. Some of them came, as usual, to bid me good-night, and I sat quietly looking out on the hill-side.

Now, Della had a lonely walk home. Her path crossed the willow-bordered stream beside the school-house, and wound up the steep western hill, into a region of scattered pines. Leaving her companions, she set her resolute face homeward. Half an hour elapsed before I left the school-room, and when I passed out I saw Della standing under a low-limbed oak on the top of the ridge, dark against the sunset. She stepped upon a pointed rock, setting down her lunch pail, and laid her hands upon the bark of the tree. I watched anxiously, half guessing the child's thoughts. She touched the rugged trunk with light fingers, and put her arms about it, and laid her cheek against the tree, and seemed to plead with its dryad. After awhile, slowly, as one who has lost a belief, she hid her face, and went out of sight, among the darkening pines.

The next day Della evidently looked upon me as a person in whom no confidence could be placed. At our evening talk the subject was "formation of names, illustrated from the roll-book." Della, after one glance, turned her face away, gave no sign of hearing, and vouchsafed no question. My heart ached for the impetuous child who had so trustingly believed the woodland myth, so pitifully failed to find the keys of the tale, so earnestly arraigned me for false speaking.

"Della," I said as school was dismissed, "wait a little while and I will go home with you." (There had been a standing invitation of this sort for weeks.) A little toss of the poised head was all her reply. Soon the last hoof-beat sounded up the ravine, the voices of the other children died in the distance, and Della and I crossed the rivulet together. Suddenly the witch brightened over a glowing cluster of scarlet mimulus by the margin, and stood knee-deep in leaves, and hid her face in the waves of color, with a glad cry. She caught a spray of blossoms, and, with a naive, swift look at me, sprang up the bank, and up the hill paths beyond. It was a mute challenge given and accepted, but the eager feet sped so fast through the brown grass that I only overtook her near the top of the ridge, and we were both out of breath.

"Sit down on this rock, under this oak, Della," I said, "I have something more to tell you."

So we began to talk, and after awhile I spoke again of the fair dreams which men had woven in their searchings for the divine—dreams which were in es-

sence real because they are of the eternal mind. The child-face flushed; the child-heart understood. She crept closer, shyly, and looked up, with a quiet smile. Far over the hills we watched the sinking sun, and Estero Bay, white as molten silver. The narrow cañons grew full of fleecy mist. The wild little runaway maiden put her hand trustingly in mine and said: "Tell me some more pretty things."

We walked along the path, talking as we went. I found that this untaught child knew far more than she could express. She loved the gentle stars as they passed over her humble home; the winds in the crested pines were clear and sweet voices; her heart quickened with the flying pulse of a lark; she cried over the trampled flowers by the spring, where the cattle drank. She gave me glimpses of her lonely life, and wandering thoughts, until, in the mellow dusk, we found her father's pioneer cabin. I was received with genuine hospitality, and spent a most agreeable evening. Then, in the morning, we climbed the hill, crossed the brook, and marched into the schoolroom, better friends than ever before.

The weeks went by, and Della studied with all her might. Sickness in the neighborhood, however, cut the school term short, and one Monday morning I called the children together and told them it was the last day of school. At noon I met Della by the door, and said to her, "I am very sorry, Della, that our pleasant days must come to an end." Without a word she took her bonnet, and went along the willow-bordered stream, coming back with tear-stained eyes. School had meant so much for her; there were so many things to learn.

The last recitation was over, the records had been read, and praises and prizes awarded; visitors and children departed with kind farewells, but Della had disappeared as soon as school was dismissed. Slowly I gathered up my books, wishing that I might see her once more. In through the door came the familiar figure—alas, now for the last time, and Della came up to me with her reply to my words of the morning: "Yes, I am sorry, too." Then she began to cry; not loudly, but in a pitiful, repressed way, and we two stood by the window, gazing out into blue infinitudes of sky, and talked of life and living until the child-soul thrilled with hope once more. Then we climbed the remembered hill, and left a memorial cairn piled beneath the rugged oak. Then the last words were said, and the gray hill grew between us.

I have never seen Della since, yet I am sure that the same stars shine over us both, and sometime she will know how precious her childish faith and affection was to the tired teacher. I know that none can hold her back, or bind her arms, for she will learn and grow into that purest of things, a noble womanhood. So I am content to leave the deep-eyed child to kind nature and wide heaven.

SEPTEMBER THOUGHTS.

"The longer I live,' said a friend, "the more do I become convinced that men are not made better by any crying out against their sins, nor by polemic pleadings and controversial eloquences; but only by sympathy and affection. If we can give people simple and healthy pleasures they become at the same time happier, and to make any one truly happier is to make them better." This is a part of the new gospel which the world is learning by slow degrees, and in which lies hid, as the germ within the seed, the grace and glory of wonderful

things. In the waste places of earth the light of this new dispensation shall shine. Hereafter, if a man says with his lips that he is happy, we shall not believe him until his looks and tones bear witness to the same.

The other day, in this wind-swept city, a minister preached a sermon, and this editor heard it. His sermon was full of picturesque expressions, and was almost faultless in delivery, yet at least one hearer went away with feelings of mingled pain and sorrow. For this sermon, stripped of all its incidentals, and reduced to its primary propositions, was founded upon a mistaken idea of the motives which make men dare greatly and conquer like heroes. The fallacy of which we speak reappears in every age, and is a besetting sin of the meaner order of minds. It consists in taking a bread-and-butter view of the universe. "You must be good, because this heaven I tell you of is rich reward for your earthly sufferings." Then follow imaginative pictures of the tribulations and sacrifices of Christian people, poor wanderers in a desert land.

From such doctrines no prophet is born; no spiritual leader can ever come. We shall tell men, if we are wise, that it is best to do right because it is healthiest and happiest; that to truly live consists merely in having full possession of one's faculties, physical, mental and moral; that, beyond and above this, there are times even in the dullest existence, when forlorn hopes are needed, and unnamed heroes are put in some lonely front of war, with no men looking on, but with the universe for witness. Alas for them if they falter; sorrow unspeakable if they desert the field! To do right for right's sake; to "come rough-shod for duty's service," not dreaming of rewards—this is that which makes strong the hearts of men, to which high motive let us continually appeal.

In the ripeness of autumn, remembering how long we have toiled, and yet how truly the planted seeds did grow, how surely the harvest did come, the gospel of patience is sweetly proven, which fain gospel let us gently set forth. Not unaware of the past, the gospel of patience bids us continue to toil, neither forgetting to hope nor ceasing to be glad. After eras of stock gambling, of fierce and feverish excitements of stormy politics, and of ghastly tragedies, born of passion or avarice, we are finding a better atmosphere, a developing love of home and of home's fair sacredness, garden-hid, tree-shadowed, rose-embowered, white with pure lilies.

It does not really make much difference to California whether we have a few more or a few less railroads, or whether this side or that side wins in politics. But the vital point is, what sort of people are we? Are we honest, earnest, faithful? Do we honor brains and truth-speaking, even in plain attire? Is money, with all its pleasantness, less in our sight than truth, virtue, and simplicity of nature? Do the young men and the young women of our State realize how great is the future, how near are its prizes and triumphs? What our true friends would choose is that general prosperity which is felt alike in all classes of society; the development of varied industries; the growth of culture and increased knowledge of what the rest of the world is doing; and also a keener appreciation of the good, the true, and the beautiful, a swifter recognition of merit, and a stronger condemnation of the false, cowardly, vulgar, and shoddy elements wherever and whenever found.

One of the inspiring things of this world is to meet a man who knows what he is about, and who is by nature progressive, strong, and cheerful, feeling through his nature that it is good to be one of the toiling multitudes. Such a man is never a man of creeds, but his all-pervading religion is a Gospel of Improvement, whereof hope and labor are the corner-stones. To such a man each moment of life has some gift, or beauty, or lesson peculiarly its own; each face in the ebb and flow of life's currents has its hinted possibilities; each new singer's song, or artist's picture, is mainly beautiful for its suggestiveness. There never yet was any garden quite so fair as the poet's utmost dream, but, and herein is the blessedness of earthly arrangements, the thought, which beginneth by interpreting a real garden, passeth to ideal beauties, and endeth in some fairy realm, where roses fade not, and where grace and purity reign forever. I have known a few persons to whom the meaning and lesson of things called commonplace was often revealed; in whom the singing of blackbirds did really arouse suggestions of old-time ballads, and the blossoms of spring brought an awakening flush and rapture. The time is coming when among the over-troubled communities of modern days such temperaments will seem peculiarly blest, and men will search for their secret. It is happiness for which the world hungers, following strange lights, enduring fierce torments. Perhaps happiness lies nearer than we guess, in quieter ways than we have chosen to tread.

It is said that the best liquid fertilizer for Fuchsias, Azaleas, and almost anything else is the water from coffee and tea grounds.

LOVE IS AS A FLOWER.

By Millie W. Carpenter.

The turtle dove fol!s her matronly wings,
My darling, as hand in hand we wait;
(Love is as a flower! the old song sings)—
And out of the twilight calls her mate.

On the apple-tree boughs the foliage springs,
Fr.sh leaves and green bloom day after day;
(Love is as a flower! the old song sings)—
Love, would that our love would bloom alway.

Summer the roses of glad life brings;
She scatters them round her with lavish hand,
(Love is as a flower! the old song sings—
Till flush and flavor fill all the land.

The ivy about the gnarled oak clings,
Hiding seam and scar in a drapery bright,
(Love is as a flower! the old song sings)—
And makes it a joy to the whole world's sight.

Oh, l ve! my love is a flower that springs
In my heart, deep rooted and strong and fair,
(Love is as a flower! the old song sings)—
And my joy is to nourish and keep it there.

Correspondence.

[The editor of the California Horticulturist cordially invites all persons interested in any branch of horticulture to send practical questions and notes of their own successes and failures. A brief, unadorned statement of events in one little garden may often prove of universal interest. Short notes from busy people, all over the Coast, will make this Department fresh and valuable.]

HOME RECOLLECTIONS IN BONNY SCOTLAND.

I was born under the shadow of Huntingtower Castle, made famous in history and romance by being the scene of "The Lovers' Leap." In feudal times it was long the house of the Ruthvens. Its age may be only approximately given, being built when the bow and arrow formed the weapons of men. Such scenes naturally gave a romantic tone to the minds. Bruce, Wallace, and the Highland chieftains, filled a larger place in the dreams of youth than did history, travels, or the higher branches of science. Every knoll had its legend; every cairn of stones its

ghostly chronicle; the caves were especially places of dread, and the Roman camps had their traditions. Every object of natural scenery which met the eye was associated with some hero of the past. Structures reared by the Picts and by the Danes were still entire in some of the cities.

In my younger years I read many tales of American pioneer life, and the love of adventure mingled with everyday surrounding, influencing life in currents little dreamed of by those who guarded the child, and educated the boy. Many a time when mother dispensed alms to the beggar we children have heard her remark, "Who knows where my boys may be, or who may be called upon to supply them with food." That same spirit has made us feed the hungry and shelter the homeless many times since. Little did that mother think that after sixty years her words would be remembered among the great hills of California.

It is a great pleasure to look on the past through the haze of years long gone. We revisit the rugged hills, the flower-clad vales, and the gardens of Eden-like beauty. The streams and cascades glisten as of old. The boys and girls are aglow with life and innocent glee.

The gardens belonging to baronial estates are marvels of beauty and perfection, but the eyes of the poorer classes are seldom allowed to gaze upon these floral wonders. Only the rich and titled may dwell in these earthly Edens. The poor must be satisfied by providing the means and muscle for the rich man's enjoyment.

In Scotland the apple and the gooseberry attains to a high state of perfection. The cold of winter precludes the production of the grape and peach and similar fruits in the open field, but by the extensive system of hot-houses, now in use by the landed aristocracy, vast quantities of grapes, etc., are raised. Few of these find their way to market, grapes, etc., being a luxury seldom or ever enjoyed by the masses. Gooseberries, on the contrary, are found in every cotter's garden. Also the apple, pear, cherry, and plum, all of which withstand the cold winters. Flowers are much cultivated by the middle class in their short and rainy summer. The kitchen garden of the cotter is filled with necessary vegetables for the table; but the housewife is far behind her American sisters in the preparation of garden products. Many a savory dish might be supplied if American ideas of cookery were learned and practiced. Progress in our old country is of slow growth. Well do I remember the innovation of the "cradle" to supplant the sickle, and what a storm of abuse the poor farmer received at the hands of the "shearers," as harvest hands were then termed. Fruit is seldom found on the table of those in common circumstances. At rare seasons, and in sickness, jellies are on hand. As a whole, progress is of slow growth among the Scotch peasants.

To one who visits Scotland the old castles are most interesting. The thistle grows where roses once bloomed. The bats hold court where courtly gayeties occupied the fleeting hours. But many of these grand old towers still remain in their pristine glory. The future will crumble these piles of masonry. Increased privileges for the many may divide the lordly domains into small farms for individual possessions. The grinding landlord will be unknown, for a great change is coming over the spirit of the world as new forces are breaking old fetters.

Yours truly, JOHN TAYLOR.

GEYSERVILLE GARDENS.

A friendly correspondent gives us the following pleasant picture of horticultural progress in the lovely Russian River Valley. He says:

EDITOR HORTICULTURIST:—In this locality, floriculture is yet in an undeveloped state, though there are some enthusiastic and successful lovers and growers of flowers; and it is curiously suggestive of the power of a good example to know that most of the gardens were stocked with "slips" from the lovely grounds of a lady who brought with her from San Francisco many rare plants to her country place here, while at the same time it shows why there is as yet little variety in the gardens, as each one gets slips from his neighbor, and without thinking of sending abroad for new varieties. Last autumn we sent to a well known Eastern firm for some shrubs with a view to experiment, and at the same time to Shinn & Co. for oranges, olives, walnuts, etc. Of the shrubs those most hardy among them like Spiræas, Pyrus and Wisterias, died; Deutzias have been very feeble, but by careful nursing have survived, and are now making a fair growth. Spiræa calosa alba has been in constant bloom from early spring until the present time. Hydrangea peniculata grandiflora is a thing of great beauty and unsurpassed joy with its large panicles of bloom six inches across and a foot in length. Rhododendrons and Azaleas seem quite at home in the open ground.

The winter was most unfavorable for newly set plants, the cold being severe in the early part and excessive rains later; yet all our semi-tropics though slightly nipped by frosts, recovered and have made a fine growth, having had no water since July as we thought it best to harden them off for another winter. Nearly all of the fruits that have been tried here succeeded well, though this year the peach crop was almost a failure, in some orchards it being entirely so, while others had half a crop. Plums and apples were an excessive yield. The crop of grapes is simply immense, and is of fine quality and flavor. I believe we have the favored locality for the vine, and I predict that in the near future this portion of the Russian River Valley will be one entire vineyard. A. D. K.

Geyserville, Sonoma Co., Sept. 13.

A FOREST HOME.

EDITOR HORTICULTURIST:—I look in vain through your pages for any place that my pen could fill, though if I could see some of its bright and able contributors, I could find much to say to them, for of flowers and their kindred I never tire, nor of the society of those who love them. I really wish I could join this company, offering something of interest.

We are on a new homestead, shut in by the giant firs. When I came here two years ago, I found much to interest me--the calm, bright days and quiet nights, their stillness broken only by the fall of some mighty monarch of the forest, the swift-flowing streams in their deep cañons, the new forms of vegetation around me, luxuriant, though rather monotonous.

I looked up at the ever-present firs with their graceful taper and fringy outline, so beautiful in sunshine and clear sky, so dark and sombre in the cloudy day. I looked down at their fallen kindred, and mused upon their age as the concentric rings told the story. I plucked the wild flowers, so many of them fair and white, so few gay or brilliant, and gathered the tall ferns that bent their graceful heads to

touch mine. Then, if my thoughts wandered beyond the dark forest wall that shut me in, it was only eight miles to the mighty Columbia, bearing on its broad current the ships of all nations, and in favoring conditions of wind and air, I could hear the hoarse whistles of the ocean steamers, and I loved to try to fancy what scenes they had witnessed, and what freight they bore.

I once spent eight months in the foot-hills of Yuba County, and found every day of the spring-time a new delight, and do not wonder at the enthusiasm of Californians for their flowery State. Yours truly,

FANNY E. BRIGGS.

La Center, Clark Co., Wash. Terr.

A MISSIONARY CYPRESS VINE.

Miss Rappelye, the earnest teacher who left the place in Oakland she had filled so long and well, and went to Broussa, in Turkey, as a missionary, gives us, in a private letter, a glimpse of window gardens. We have ventured to copy a few lines, for many of our readers are interested in her work, and the Oaklanders will be glad to know that their sweet peas are thriving. The letter is dated August 2d, and in it the writer says:

We missionaries, in the practice of economy and in our still cherished love of the beautiful, have occasion sometimes to invent some original expression of simple adornment in our gardens. For instance, an old kerosene can, I utilize in the spring by removing one of the sides, piercing the remaining sides with holes for air and drainage, and then fastened securely a stick four feet long in the bottom so that it stood upright in the centre of the box thus formed. Then the earth was put in and seeds of the delicate cypress vine planted. When the plants were beginning to run, cords were passed from the edge of the can to the top of the stick, thus forming a pyramid. The vines are now drooping over the top of the staff, and in the morning when the red flowers are open it is a very pretty sight, and the native people ask me for the seed of that pretty flower. In another can similarly constructed were planted some sweet pea seed from Oakland, and the beautiful and fragrant flowers have spoken to me many loving stories from far away friends. In this climate such box planting is preferable to the open border, as the plant when in bloom can be carried into the house during a heavy storm likely to come and spoil delicate blossoms.

NAPA GRAPE LANDS.

EDITOR HORTICULTURIST—Dear Sir: I have been over a very large part of this valley lately. Crops, especially the grape crop, are immense. Speculation is rampant here in all vinicultural matters. Land has gone up within the past year from twenty to fifty per cent. Parties in search of small holdings are quite shut out, except at the head of the valley, or on second-class land, or on places of dubious adaptability for grape culture. It is my belief that present arrangements will entirely alter in a few years. The present immense acreage of valley land under vines will be eclipsed by that of the foot-hills and remoter ground as soon as the undoubted superiority of their products is more generally known. Mountain grown wine will become the Golden Egg of California. Yours truly,

MARK WALKER.

St. Helena, Napa Co.

A new and unusually hardy banana has been found on the uplands of Colombia, and fruited in Europe.

BRIEF GARDEN AND PLANT NOTES.

Take up Tigridia bulbs.

There are now several choice double-flowered rhododendrons.

Do not permit weeds to run to seed on your flower beds and gravel walks.

Collect seeds as they ripen, and hang them up to dry in a shady, airy place.

A good stock of Stevias and Eupatoriums should now be grown for cut-flowers during the winter.

Campanulas can be raised from seed sown now or in the spring. Sow in shallow boxes or pans of fine soil.

Double Wallflowers are hardy perennials, and if cut back slightly after flowering will form bushy and floriferous plants the following year.

Pots containing plants that are plunged in the ground should be examined frequently, to see that the roots are not passing into the ground.

If some pains be taken with the violets to get plants started early, they will begin flowering soon, and continue to bloom through the winter and spring.

A small portion of air-slaked lime put into a liquid manure tub will remove the smell, and when the liquid is applied to the soil will destroy worms and slugs.

The deficiency of blooming plants in conservatories at the present time of the year may be compensated by a liberal admixture of such plants as Dracænas and Coleus.

The magnificent Cocos flexuosa palm, at Nice, resisted uninjured a temperature of 3° below zero (centigrade), while Latania Borbonica plants alongside were injured.

Have in pots for winter use in the house the following: Justicias, Bouvardias, Geraniums, Heliotropes, Carnatious, Stocks, Gardenias, Hydrangeas, Lobelias, Fuchsias.

The Verbena twenty-three centuries ago was used on the altars of the gods. Virgil tells us the shepherds used it with frankincense in a spell designed to win the love of Daphne.

If you wish to have a good supply of Lygodiums, Adiantums, Pteris and other ferns that hold their fronds during the winter, now is the time to stimulate them into growth.

To keep cut roses in water, the quality of the water may exercise an influence upon the duration of the blooms. Try a little charcoal in it. This is supposed to have a beneficial effect.

In a flowering state, roses of every description are all the better for having all bad flowers regularly removed, not more for the sake of neatness than for the encouragement of successional blooms.

The first fronds from a newly imported Tree Fern are often deformed, and rot off. Keep the stem of the plant moist with the syringe, and when good roots have been formed you will get good fronds.

The Dorosidæ family of flowers, Ruskin tells us, including the great five orders, Lilies, Asphodels, Amarylids, Irids, and Rushes, have more varied and healthful an influence on man than any other tribe of flowers.

Every one who desires to remove plants from the woods should mark the spot where the roots may be found after the blooming season has ceased. This should be done while plants are made conspicuous by their blossoms.

It is stated that worms in pots can always be got rid of by using for the plants water to which a tenth part of grated horse chestnut has been added. Under this treatment, it is said, the worms must either fly or die.

Pinch back foliage plants that need it, while such articles as Salvias, Heliotropes and Petunias should now be encouraged to produce abundance of flowers in the fall, by giving the beds an occasional dose of liquid manure.

A very frequent use of the heavy roller and mowing machine will improve the lawn. Newly laid turf often grows very rank the first year or two, but as the land settles down the grass will get finer; persevere with the roller.

Japanese Anemones should be grown in small gardens, for when once planted in light sandy soil they take care of themselves; and they will either grow in the open or under the shade of trees, and flower profusely from August till November.

The best kind of Hoya is H. carnosa, which is best planted out in a warm greenhouse in loam and brick rubbish, with a little rotten cow manure added. H. bella may be grown in pots in any ordinary greenhouse, but is better in a warmer temperature.

In the Arctic region there are seven hundred and sixty-two kinds of flowers; fifty of these are confined exclusively to the Arctic region. The colors of these polar flowers are not as bright and varied as our own are, most of them being white or yellow.

Gardening Illustrated has somewhat to say about the Ivy Harebell (Campanula hederacea) for the greenhouse, for window gardens, and for the open border. It is a hardy, trailing plant, a native of Great Britain, and has an abundance of bluish-purple flowers.

Use good turfy loam and sand made tolerably firm in the pots of geraniums, and keep the points of the shoots pinched out. This, if they are not in too shady a place, and they receive plenty of air, and are near the glass, will induce them to grow bushy and flower profusely.

To propagate Virginia Creepers take cuttings of the current season's growth as soon as the leaf falls. Cut them to three eyes, and insert them firmly in light sandy soil. The best way to strike them is to insert them firmly in a north border, where the sun comes but little in the spring.

Lilium Auratum and the varieties of L. lancifolium, so soon as the foliage begins to fade, should have the supply of water withdrawn very gradually; and so soon as the leaves and stems become dry, place the pots on their sides in a cool, dry place. The same process should be pursued with the roots of Gesnerias and Gloxinias.

Syringe mildewed roses with water in which has been dissolved a good proportion of flour of sulphur; also when the leaves are wet, dust with sulphur through a pepper-box. Give plenty of water at the roots. Keep the shoots thin enough to allow of air and light circulating round them, and mulch with the half-rotten manure or short grass.

Plants bought from a nursery and placed in a window often lose their blossoms and buds. It is better to buy the plants in a young state and grow them in the window. Plants lifted out of the ground and potted

should be placed in the open air in a shady place for a few days before being put in the window. Give plants in windows all the air and light possible to keep them clean.

It is of course impossible to drain seed pans without they have holes in the bottom. Either get some of this kind, or make a good hole in the bottom of those you have. Place over the hole a piece of broken flower-pot hollow side downwards, and over this put ½ in. of crocks broken to the size of peas—bricks will do, or even ashes sifted; over this put a layer of cocoanut fibre, flaky leaf-mould, or moss, and then put on your soil.

The old Fuchsia corallina does remarkably well trained up rafters. Souvenir de Chiswick and Venus de Medici are also two other old favorites that are well suited for the purpose. Plant them out in rich, well-manured compost, and train them up in the form of a single stem, removing all laterals until they are as high as required. After they have bloomed in autumn prune the laterals close in, and start the plants afresh in the spring.

Most hardy annuals, biennials, and perennials will do better if sown in autumn than if the sowing be delayed till spring. Not only is it the most natural time for sowing, but the land is usually warmer and the seeds are a shorter time in the ground before germinating, and they consequently produce a stronger and healthier plant, and they are less liable to be eaten off by insects; and, lastly, much time is gained.

In an English park, one of the most striking round beds is one planted as follows: In the centre is a large star composed of Blue Lobelia, studded with single plants of the variegated Fishbone Thistle (Chamæpeuce Cassabonæ) and Yucca aloifolia, this star being set in a groundwork of Golden Chickweed (Stellaria aurea), in which are introduced small round patches of the Silver Stonecrop (Sedum acre elegans) with a large Echeveria in the centre of each.

From the old Clove Pink (Dianthus caryophyllus) originated the Carnation and the Picotee. They are both florists' varieties of that pink, and although florists laugh at people who can not distinguish the difference between Pinks, Carnations, and Picotees, it is more than they can do with certainty only by rules of their own making. The Picotee, however, is generally known by its being all one color, edged or laced with another color, although there are some kinds without any lacing whatever. The Carnations known as "selfs" are those of one color only; bizarres are striped.

HOME AND FOREIGN HORTICULTURE.

The Œnotheras.—A correspondent of the *Journal of Horticulture* calls attention to the evening primroses as valuable herbaceous plants. Of Œnothera Veitchii, he says: "This is a beautiful little yellow dwarf annual that handsomely peeps out of the shrubbery or herbaceous border from between green foliage, the soft yellow color contrasting with almost any other. The flower is much smaller than Œ. macrocarpa, but many would think this a commendation. I find it most floriferous when the soil is somewhat dry, sandy, and poorish. When the question is asked, what herbaceous plants can I readily grow? I would like to say a word for the evening primrose family, not the least desirable of which I con-

sider this little favorite. The cheapness of many of those hardy annuals, I am afraid, makes them less appreciated than they deserve."

Flower-coloring Through Insects.—Dr. Mueller has a note in *Nature* in which he points out that Saxifraga umbrosa has been adorned with brilliant colors through selection by dipterous insects of the family Syrphidæ. He says: "Among diptera the most assiduous visitors of flowers are certain syrphidæ, which, elegantly colored themselves, are fond of splendid flower colors, and, before eating pollen or sucking nectar, like to stop awhile, hovering free in the air, in front of their favorites, apparently fascinated, or at least delighted, by the brilliancy of their colors. We may safely conclude that it is by their selection of elegantly colored varieties that these flowers have acquired their beautiful peculiarity.

Propagating Fuchsias.—The following method of raising young plants of fuchsias is said to be practiced by cottagers in the west of England. "In the autumn, after the frost has destroyed the foliage, the wood of the present season is cut off close to the ground, and laid like a sheaf of corn in a trench a foot deep. The bundle is covered with a few inches of soil, and here it remains until spring, when a multitude of young shoots may be seen pushing their way through. The soil is then carefully moved, and with a sharp knife a cut is made each side of a joint, and the result is rooted plants enough for the parish. The old stool throws up more vigorously than before, to be served in the same way the following autumn."

Starting Rose Cuttings.—For roses one should choose from a good vigorous branch of last year's growth a fresh shoot, containing two or three buds, such as will always be found more or less swollen at the base of the leaf stems. It should be cut from the parent branch diagonally, with a smooth, clean cut that will bring off a little of the old bark as well, in order to make the condition as favorable as possible for the formation of roots. Have ready a box of rich mould. With a round pointed stick make a hole several inches deep, and fill it with clean sand; insert the end of the slip in this sand to the depth of one or two inches; be sure to make it firm in the soil, and the sand acting as a percolator for moisture, you may keep your slip well watered. You can soon see, by the swelling of the buds and the dropping off of the old leaves, whether the slip is indeed taking root, but do not attempt to remove it to the place where you would wish it permanently to remain until it has put out several sets of new leaves.—*American Cultivator.*

Culture for the Hyacinth.—The best compost for the hyacinth bulbs is the following: One-third river or sea sand, one-third well rotted cow manure, and one-third good garden mould; or, where the soil is naturally light, well rotted cow manure liberally intermixed is all-sufficient. The beds composed of the above compost should be well dug, to the depth of fourteen inches, and raised from two to four inches above the level of the walks, and in winter may be covered with withered leaves, long manure, or with light earth formed of decayed leaves from the woods. They should be planted about six inches deep, and from five to six inches apart. Care must be taken not to press the soil too hard around and over the bulbs. For culture in glasses, the bulbs should be so placed that only the base of each

touches the water; then place them, for the first ten days, in a dark but cool closet or room, to promote the starting of the roots, after which expose them to the light and air as much as possible; avoid placing them near gas light. The water should be changed as it becomes impure; draw the roots entirely out of the glasses, rinse off the fibres in clean water, and wash the inside of the glass well. The water should never be allowed to freeze, as it would not only burst the glass, but cause the fibres to decay. When the bulbs are well advanced, give them a soft shower of rain-water every day.—*Thorburn's Catalogue.*

To Strike Cuttings.—Take a box of any handy size and three or four inches in depth. Fill the box with sand, press it down and water it, and then place the box in a partially shaded place, near a bush, tree, or fence. If this should be done about the first of June, at that time in this part of the country it will be found that nearly all of the shrubs will have made wood that will strike readily. Having removed a young shoot, first cut away the soft terminal end, and then make the rest of it into short cuttings in about three or four buds each, leaving about two leaves on the upper end of a cutting and removing those below. Insert these cuttings in the box of moist sand. This half hard wood of many shrubs will quickly root; we would mention especially Spiræas, Deutzias, Althæas, Weigelas, and Roses. Besides these, cuttings of Geraniums, Fuchsias, Begonias, Heliotropes, etc., may be made at that time, and will root with great certainty. Any time during the summer, cuttings of soft wooded plants, like Geraniums, Coleus, Achyranthes, may be inserted in the garden beds or borders, fully exposed to the sun, and will root in a short time. It is best to put the cuttings in on a day that is a little damp, but, if it is not convenient to wait, they can be put in in bright weather, toward evening, and then have a watering, and for a day or two be shaded with a newspaper, and then be left quite exposed.—*Vick's Monthly.*

Autumn Sowing of Seed.—Seeds of hardy biennials and perennials are best sown in well-drained ground, arranged in four feet beds, with a track or alley one foot wide between them, for the convenience of weeding, thinning, and lifting the plants. The soil should be in a well-pulverized condition, and if too dry should be well soaked with water twelve hours before sowing. They may either be sown broadcast or in shallow drills across the beds; the latter plan is the best, because it gives facilities for stirring the soil between the rows of young plants. The drills can be made by pressing a four foot rod or straight edge into the soil the required depth, according to the size of the seeds; one-half inch will be deep enough for all small seeds, and when the seeds are sown thinly in the drills, cover lightly with finely sifted soil. If the weather be hot and dry, shade by laying mats, or similar coverings, on the ground. If the patches be small, leaves will answer the purpose very well; they must, however, be removed as soon as the young plants appear. When annuals are sown in the spring in the borders where they are intended to remain, they are usually sown too thickly, and the thinning delayed too long, consequently they never attain their proper development—the flowers are poor, the growth weak, and the whole plant short lived. This is the main cause why annuals are in many places so unpopular. If sown on good

land, and such plants as nemophilas, saponarias, etc., thinned out, so that every plant has not less than half a square foot to grow in, they would present a much more satisfactory appearance than they usually do.—*Gardening.*

HANGING BASKETS.—The rustic hanging basket, and the imitation log, are the most popular styles if one has to purchase. Wire frames can be purchased at almost any hardware store, and lined with the longer and more feathery kinds of moss, are very beautiful. It is only necessary that the whole structure should have sufficient strength, and that the wires are close enough to each other to hold the moss securely. Their supports are attached to the top, and brought together above, to a ring for hanging it by. If the basket be of good size, these varieties of plants may be satisfactorily employed—a climber, to twine about the supports, a pretty trailing plant, to droop over the edge, and a gracefully formed plant for a "body."

Geraniums, centaureas, or begonias, are excellent for this purpose, but a pretty variety of coleus, as the Multicolor, Eclat, or Verschaffeltii, is perhaps even more satisfactory, as the brilliant foliage contrasts finely with the dark green of the other plants, and the effect, when the sunlight falls upon it, is very beautiful. For climbers, we may choose from German English ivy, Passion vine, Maurandya or Madeira vine, with the certainty that any of them will prove satisfactory; and for droopers our choice may be the Othonna, a charming basket plant with round leaves and star-shaped yellow flowers. The Mesembryanthemums and Tradescantias, or "Wandering Jew," give pleasing results. If but one species of plant is to be used, Oxalis floribunda is sure to be a delight. The leaves are three parted, the flowers grow in clusters and are white and rose colored. Light sandy soil with a dose of liquid manure once a fortnight as a tonic, seems to suit it exactly.—*Mich. Farmer.*

NOTES ON IRISES.—The *Floral Cabinet* gives the following descriptions of a most valuable family of plants which should be in every California garden: The most important species is Iris Kæmpferi, or Japan Iris, which consists of more than thirty distinct and well-marked varieties, all free growing and vigorous, and perfectly hardy. In a rich soil they grow from three to four feet high, having handsome green leaves spreading in a pleasing fan-like outline. Their large tripetaloid flowers, from six to ten inches in diameter, which are perfectly distinct from other species, are very freely produced and of the brightest and most pleasing arrangement of colors, from the purest white, the darkest blue, to the sweetest of rose, salmon, maroon, and pure white tints, stripes, and blotches, and occasionally elaborately veined and marbled. An English writer says: "When they are in flower the effect is really grand. To compare them to a mass of orchids hardly does them justice, for excepting the Lælias and Cattleyas, none of the orchids can approach them in the gorgeousness of their colors."

Iris Susiana (Chalcedonian Iris) is a splendid and distinct species, growing about two feet high. The flowers are very large, densely spotted and striped with dark purple on a gray ground. The inner petals are largest, the outer ones very much deflexed. The flowers appear in April and May. Native of the Levant. This species is impatient of moisture, and should be planted in a dry, gravelly soil, or rockery.

Iris Iberica is a very dwarf and exceedingly neat plant, with glaucous leaves and gigantic flowers, the upper half of which is pure white, the lower half most curiously veined with black and brown upon a groundwork of yellow. Like the preceding species, it requires a dry situation, a sandy, coarse soil being best adapted to it.

Iris Germanica is the species most commonly met in the herbaceous border. It flowers in May, four or five on each stem; colors blue, purple, and white with yellow markings. Hybrid varieties to an almost unlimited extent have been produced. A dozen choice sorts would, however, include all those that are really desirable.

Iris Anglicæ (English Iris) is a bulbous-rooted species, hardy and robust, growing from fifteen to twenty inches high, producing large, handsome flowers, with remarkably rich purple, blue, violet, and lilac colors predominating.

Iris Hispanica (or Spanish Iris) is another very beautiful species, with many varieties; it blooms very early in summer. The flowers are smaller than those of the English Iris, but of the most intense colors and beautiful markings. Says one writer: "The division of the tribe commonly known as Spanish Iris, with its crisply-formed flowers, quaint in form as Gothic carvings, and at the same time the dazzlingly rich mixture of coloring of the hundred varieties, render it a charming feature in a June garden."

Iris Pavonia is the best variety for horticulture, and is for garden culture. It is very small in bulb, plant, or flower. The flowers are pure white, with three bright blue spots, one on each petal.

Iris cristata (Crested Iris) is a charming and very dwarf kind, growing about six inches high; flowers solitary, on slender scapes, but produced in such abundance as to completely cover the plant with its soft lavender-colored blossoms. This is a native of the Southern and Western States.

Among the other very beautiful species we only notice Iris tuberosa (or Snake's-head Iris), a curiosity and a beautiful dwarf-growing plant. It is a very early flowering sort; the flowers are large and fantastic, the interior petals green, the exterior velvety black edged with deep green. Iris pumila (the so-called Crimean Iris) is a small, neat, fast-spreading, thrifty, and sportive plant, of which there are many distinct varieties.

Editorial Department.

IMAGINARY VISITS.

This editor, by virtue of a dozen pressing invitations, has a dozen visits which must be made as soon as possible. The limitations of time and space, and the bread-and-butter demands of this complex life, are such with us at present that these visits must be made in the spirit, and can in no other wise be depended upon.

This which is written here, is a very earnest greeting to the homes whose friendliness I best remember, and with purest memories treasure, both now and henceforth. State-wide are they scattered; they are not known to fame, nor burdened with wealth; the quiet lives of the dwellers flow like clear rills from the snow peaks. Of these, one is in that sunny city by the warm sea, and south of rocky Point Conception; thou garden-land of Santa Barbara, when shall I again be made wise with thy secrets? One lieth near Monte Diablo, whose blue and rocky height rules over the bay counties, and is for leagues

the central figure of the landscape. Here busy hands are planning for a garden, will lay the hearth-stone and rear the roof-tree, and hallow it with memories of other homes, and with blessed hopes to which the voices of children keep time. One is hid in a ravine, in the mountains of gold, in the heart of the wild sierras, near the shadows of pines, the rush and murmur of torrents along the mountain side. But the shadows of pine are long and deep; types are they of a holy and reverential sorrow, such as we, poor wandering children in this time-corner of the universe, must sometimes find. One is on the cliffs above the blue Pacific, and the redwood forests fold it about forever. Wild azaleas, calycanthuses, and dogwood grow along the rude log fence, and encroach upon the small clearing where my honest pioneer friend raises his peas, onions, and potatoes; the climbing rose his girl-wife planted beside the door of their log cabin, has reached the roof, looked over it towards the sea, and now begins to take possession of the lower branches of a fir.

There is another home I remember, within sight of the Marysville Buttes, near the Coast Range, on the gentle slopes of Western Colusa, in a land where in some happy future many gardens will be known. Away north, where Mount Shasta shines luminous, pale, and supreme, the grandest of royal peaks, there are valleys and streams, villages, and farms, and people whose kindness can never be forgotten. Beside the rivers of Trinity, among the sand hills of Monterey, in valleys of Santa Cruz, where this year's harvests are said to be greater than ever before, among the scattered oaks of the plain lands of San Joaquin, in mountain towns, crowded with busy miners—such towns as Auburn, Placerville, Grass Valley—in these, and in many other places, there are friendly and modest homes which we would fain visit once more. Some of you will perhaps recognize the picture; some of you will know that it is to you, and of you, we speak, and in this fragmentary way send greeting and remembrance.

HUMAN PARASITES.

California offers as many prizes for well directed industry now as ever before. There *is* room for men to make homes, and to be independent. The tramp is an unnecessary evil; an excrescence on the face of the earth. The foothills of California will yield food and shelter for every man now tramping about the State. This gospel we have preached before, and we will continue to enunciate it to the general public, and also to each blear-eyed individual who tries to rob us of our earnings by a whining appeal on the public highway. Not because we are hard-hearted (would that a tenth part of the money we have given to such were back in our pockets), but reason, observation, and experience, have now rendered it certain to all energetic and thoughtful persons that the following things are true: (a) If a man will not work, neither shall he eat; (b) it is false that there is no work for men who are willing to work; (c) no man is entitled to a support from society; (d) on the contrary, society, having long reasoned with hosts of confirmed idlers, will shortly be forced to try more drastic remedies.

In this age of individualism, these cases of preying on the public need close study and severe measures. An able-bodied man who has any manhood, will fight his way out. He will leave whisky alone, and will work, for any wages, at any kind of work, in any sort

of a place, until he can do better. That is the whole story in a nutshell. Now, a man who can not be made to feel that it is a crime for him to be idle, wasteful, a public parasite, may fairly be termed an enemy to the State. His presence tends to demoralize the children, and his vote is always on the side of the devil. Victim of the politician, and burden of the public, he stumbles through life, a cursing curse, an embodied whine, a pestiferous *lazzarone*, a moral leper, in whom are the seeds of national woe.

Does this picture seem too strong? The half is not yet told. The interior counties of California hunger for more toilers, more owners of homes, and they stagnate for lack of such. Vacant hillsides are ready to flow with oil and wine if only men do use them rightly. There *is* government land fit to own and live from; there *are* communities where men without means, but with earnest hearts and toiling hands, are made welcome. This is not hearsay, but is known from our own observation in over twenty of the counties of California. If a man will not take hold now, in the pioneer wood, and hew out his home, his latter end will be far worse than his first; he will see this people (their petty frights forgotten) moving forward with dignity and power to unrivaled dominion and gladness, while he is left stranded and forlorn on the rocks.

STATE HORTICULTURAL SOCIETY.

Friday afternoon, September 24th, the State Horticultural Society held its regular meeting. The following members were elected: H. L. Carr, Santa Rosa; Thomas Meherin, San Francisco; J. H. Barbour, San Jose; Henry A. Runyon, Washington Street, San Francisco. Prof. Comstock exhibited several specimens of scale upon willow, walnut, apple, and other trees. One specimen of scale on orange came from Australia. W. H. Jessup, of Haywards, exhibited a specimen of plum, which he desired to have classified. It was a prolific bearer and a very good fruit. He only knew it by the term "Bulgarian." G. P. Rixford thought that the name might be a very appropriate one, as Bulgaria is remarkable for its plums. The classification was referred to a committee composed of Messrs. Lewelling, Rock and O'Connor. A specimen of currant bushes affected with the borer was shown. Nests of grubs were found in examining the shrubs, and it was desired to know how the borer propagated. The matter was referred to Prof. Comstock. The regular subject of plum and prune growing was introduced by W. H. Jessup, of Haywards, and was followed by a general discussion. A paper upon silk culture was read by Mrs. T. H. Hittell. The society then adjourned until the meeting of October 29th.

GOLDEN EL DORADO.

The people who made the El Dorado District Fair a success this year deserve much credit. Their display at Placerville on the 16th of September was irrefutable proof of the many resources of this mountain land. We wish that the people of the valleys might more generally have visited this generous and beautiful exhibit of matters horticultural, so as to have understood forever after the peculiar advantage for raising choice fruits which these mountains possess.

It was our exceeding good fortune to visit Placerville during this fair, and never, surely, was any stranger entertained with such hospitality and generous profusion. The hearts of the

dwellers in these mountain lands, under the shadows of the snow peaks, hallowed by the traditions of '49, are everywhere the same, all over this Golden State. As we found them in Trinity, in Shasta, in Nevada, in Placer, so also we found them in El Dorado. They are a brave, simple, kindly race, and their guests are like unto those in Bedouin tents, where the rites of hospitality are almost royal.

Leaving Sacramento at seven o'clock in the morning, we journeyed up the valley, brown with autumn, and swept by keen winds. The railroad track leaves the main line at Brighton, and soon after we begin to ascend low slopes and wind among brown foot-hills. Folsom, set in shining and fruitful orchards and vineyards, is passed; bits of fallow lands; fields of grain, cut and stacked; sloping pastures where fat cattle stand; vineyards about rude shanties; clumps of dark oaks, and silver pines; wastes of rocks, hurled in endless confusion—these were a few of the pictures presented, as the swaying train sped over the twenty miles or so between Folsom and Shingle Springs. It was a country which might support much more than its present population. At Shingle Springs the stage became our means of travel, and a dusty ride it was. But when having climbed the last slope, we overlooked the vast hollow within whose circle quiet Placerville reposed, the sight was ample reward for our toil.

Placerville, as we learned to know and love it during our brief visit there, is one of the most cheerful of mountain towns, and bids fair to be one of the most prosperous. It has known the discouragement of hard times, but quartz-mining and horticulture are to be the twin pillars of her future. In so brief an article as this must of necessity be, we can but point out a few of the results of our observation. The valuable display in the fruit and vegetable departments of the recent fair, was such as to impress every visitor most favorably. The fruit was simply superb, and embraced the leading varieties of apples, pears, peaches, plums, and grapes. Native wines, dried fruits, jellies, preserves, etc., were also exhibited. In the vegetable department the same profusion and success was evident. At this late day, the lists of exhibits and of premium takers having appeared in the daily papers, it does not seem advisable to reprint them, being of merely local interest. What the public, however, must be told, is that these mountain fruits and vegetables are not to be surpassed elsewhere; and that this is what water does on these red lands.

It is with a feeling of impatience that we anticipate the fast approaching time when the horticultural value of the Sierra foot-hills will be properly appreciated. When that day arrives, happy will be the man who owns a quarter section. Plainly let us state the proposition—there is no excuse for a man staying hungry, or idle, or miserable in California. Let him get himself up into the mountains, and plant grape vines. There is plenty of room.

The pavilion of the Placerville Fair is a pleasant picture at night, when the young people congregate in gay attire with much chatter. A bright, merry, and interesting set they are, to be sure. It is a pleasure to stand in an eddy of the crowd and watch the fresh young faces as they pass. Then, also, we notice, with delight, that the young folks take considerable part in this fair; they exhibit drawings, paintings, fancy work, models, and many specimens of laudable skill. This tendency should be

encouraged in all possible ways. Let bread-making prizes be offered to the young ladies of the district at the next fair, and let the school children be encouraged to compete in drawi g, penmanship, and other exercises.

The gardens of El Dorado County show the capacity of the region. There are not enough of them, but the few which exhibit care and skill are really marvels of beauty. For brilliant and glowing color in late September, the garden of Wm. C. L. Drew, at the town of El Dorado, near the post office, is decidedly the best we saw in the county. Large beds of annuals and perennials were fairly luminous, but we had not time to examine them closely. In the same town, on a flat roof, were rows of splendid cockscombs in boxes, and a bright-faced little girl was watering them. In Placerville there are quite a number of creditable gardens. Every street shows one or more which deserves study. We hope that the lovers of gardens in this beautiful town will form a flower club, and help each other to develop a perfect enthusiasm for this pretty pursuit. There is no end to the comforts and pleasures which pertain to cherished gardens. When every home in Placerville is surrounded by a well-kept garden, and has also an orchard, vegetable patch, and small fruit corner, the dwellers here will be next door to Paradise.

Editorial Notes.

THE CUZCO CORN.—A good deal of Cuzco Corn has been planted in California this year. As a rule no startling success has been anywhere obtained. It is said by some that our seasons are not long enough, by others that no ears form on the stalks. Some Eastern papers state that this variety proved a failure there some years ago. A French writer says: "Peruvian valleys furnish a maize (Cuzco) of a remarkable quality. It attains the height of sixteen feet, and the stem is as thick as a man's arm. The juice is reputed to be rich in sugar. The difficulty of propagating this variety in Europe has been owing to the female flowers only coming into bloom after the male ones had become dried up, and so made fecundity impossible. The drawback has been met by so regulating the distances of sowings that some of the male flowers will be in a fit state to communicate fertile pollen when the female flower expands."

PLANT-MEMORIALS.—Flowers are living memories of our departed friends. Each year the blooms they loved best return to greet us, and to waken tender, sweet, regretful thoughts of the sacred past. Upon the quiet graves we may plant white roses and white carnations for summer. We can carpet the spot with dense green Sedums, Sempervivum Californicum, Echeverias of sorts, and the low-growing Veronica repens. As a border, the golden Sedums and gold-tipped Stone-crop are admirable. Dwarf golden Arborvitæ should be set about the cemetery lot at intervals. For winter flowers use violets and pansies, daisies, and early bulbs, such as white crocuses, sweet peas sown early, and our native nemophilas.

CITY GARDENING.—People often ask us about what to plant in shaded spots, such as those city gardens which are shut in between high walls. Ivy will do to use on a north wall, or in the narrowest alley. On a south wall, use Japan Quince. In north borders, Daffodils, Crocuses, Primroses, Polyanthuses, and Forget-me-nots will thrive, and so will the well-known Periwinkles. In sunnier spots plant Daisies, Pinks, Violets, Pansies, Anemones, Stocks, Irises, Columbines, and such annuals as Larkspurs, Godetias, Convolvulus, Clarkias, Collinsias, and Gillias. Ferns may be put in shady nooks. Euonymus radicans and Rhus glabra are good shrubs for such locations.

HOUSE-PLANTS FOR WINTER.—We may have Cyclamens and Chinese Primroses most of the winter. Cinerarias should also assist the display. Chrysanthemums will bloom until nearly Christmas in the open ground. Early bulbs in pots should be arranged for. Heaths, Deutzias, and Genistas can be pushed so as to bloom early. Pansies in boxes are a handsome ornament, and so are Polyanthuses.

CHOROZEMAS AS POT-PLANTS.—The various species of Chorozemas are bright, and easily grown plants. They are not much attacked by insects, they bloom abundantly, and thrive where many other plants perish. They are grown from cuttings of half-ripe wood, started in sand, with gentle heat. They grow in loamy soil with leaf-mould and sand added. They begin to bloom when small, and last for months. Pinch back long shoots, and give a support of wire for the stems.

PREPARATIONS FOR THE WINTER. — Orders should be sent for spring bulbs and flower seeds at this season, and many bulbs and seeds need planting. Divide up herbaceous plants, layer shrubs, roses, and carnations. Secure climbing plants firmly to their trellises. Repair garden-walks. Fertilize the garden beds. Trim the shrubs. Prepare new lawn if needed. Sow grass seed. Poison gophers.

DISCONTENT'S CURE.—Marcus Aurelius Antoninus, the Roman Emperor, said: "Men seek retreats for themselves, houses in the country, seashores and mountains, and thou, too, art wont to desire such things very much. But this is altogether a mark of the most common sort of men, for it is in thy power, whenever thou shalt choose, to retire into thyself." Some where else, also, he says that "things do not touch the soul, but our perturbations come only from the opinion which is within."

Buddha, the "Light of Asia," the teacher of millions said, after describing the contentions and tanglements of life, "Considering these things, let one walk alone like a rhinoceros." This is intended to embody somewhat the same idea as that expressed by Antoninus. Whatever befalls of woe, or pain, or pleasure, let us preserve an equal temper. That spirit which is one's real self, is not to be harmed or shaken except by its own consent. It is well to be often among one's fellow men, and to love and encourage that in them which is pure and good; but one should live so as to neither seek nor avoid a crowd nor a solitude. One should not be lonely, nor hurried, nor sad, nor over-merry, but should tread with steadfast cheerfulness the ways of life. It is not so much what a man does as it is the mood in which he does it, the way in which he leaves it to Nature's wise keeping, that makes his life noble. Have dignity, thou discontented spirit; learn to take comfort in thy soul's inner retreat. This is that which prophets have proclaimed, and rapt-seers have revealed. Thou art the key-bearer; sit at the gates of thy city, rule, and give thy judgment.

CATALOGUE TIME. — Begin to study catalogues. They tell many large stories, some of them, but they are, nevertheless, interesting and profitable reading. Many a man wastes on coarse gratification of his ignoble self, his lower nature, what would be sufficient, if well used, to buy half a garden-full of plants and bulbs. Let us plan each year for something new and bright in the way of blossoms. Bring out the catalogues, ye merry children, and plant imaginary gardens, and save your dimes, so that you may realize these fancies.

FIVE YEARS A LABORER.—The following account is a plain statement of facts well known to the writer. About five years ago, a poorly-clad and worn-looking man came to the door of a farmhouse in Alameda County and asked for work. He was given a half day's work at ditch-digging, and worked so well that he was engaged for a week. Step first. At the end of this period he was asked if he would stay for three months. Step second. He then worked for several neighbors in turn, all of whom reported that he was a prime laborer. Meanwhile he had in his character three advantages, or what we might call leverages, to help him forward. (1) He did not gossip about his employers. (2) He was clean and respectful. (3) He did not get drunk, and he saved his money. His education was limited, and his mind worked slowly on a proposition. In brief, he was one of the ploddders. In five years his money, with interest, amounted to about $1,200. This summer he went to Northern California and bought land. He will plant a vineyard and orchard, and we predict that henceforth he will grow up with the community in which he has cast his lot, a respected citizen, of the safe and conservative kind. For some years he will now work harder than ever before, but the result will justify that.

SUB-IRRIGATION AT DAVISVILLE. — Geo. W. Briggs, the veteran fruit-grower, says that last winter's work in laying down Asbestine pipe has taught many lessons. By the first of next April Mr. Briggs expects to have all the vineyard and the orchard subpiped, and he believes that it can be done for less than half what it cost him last winter. Good results are already visible, and he expects to prove that subirrigation is the best system for making good raisins. In 1878 Mr. Briggs made 30,000 boxes of raisins, each box holding 20 pounds. The San Francisco market was over-stocked, and the next spring he shipped them East. In 1879 he made 40,000 boxes of the same size. The quality was poorer than the previous season, and they were sold for $1 10 per box. This year the crop will be 60,000 boxes, of much better quality than before, and should bring $2 per box. From this time the crop will be better each year. In the main vineyard there are 250 acres of vines of different ages, from one to six years. In Yolo County Mr. Briggs has another vineyard also. This last is of 140 acres and will all be subpiped next winter.

BETTER THAN EUCALYPTUS.—We think the blue gum is falling into disfavor, and that information in regard to other forest trees is in place. We therefore give the relative growth of some according to experiments by Prof. Beal, of Michigan University, which we find recorded in the *Canadian Horticulturist*. The trees were three years from the seed. Burr Oak, 36 inches high and 1¾ inches in girth; White Ash, 90 to 96 inches and 3 to 3¼ inches; Linden or Basswood, 96 inches and 3¾ to 4⅝ inches; Sugar Maple, 18 to 72 inches and 1⅛ to 2⅝ inches; Butternut, 66 to 78 inches and 4 to 5 inches; Black Walnut at 2 years, 28 to 43 inches and 2⅛ to 3⅛ inches; Chestnut, 43 inches and 2 to 2⅝ inches; Shagbark, 8 inches; Red Elm, transplanted, but made good

growth; Silver Maples, transplanted at one year, were 18 feet high at four years old; Catalpa speciosa, transplanted at 3 years old, was 12 to 15 feet high at 6 years. Of course the same trees would show better results in California, but the relative growth would probably be the same.

Onions and Cucumbers.—Some one, we do not know who, says that cucumbers and onions are very far from being immaculate. The former are cut down—or, rather, cut up—in the heyday of their youth, as it were, and seldom live to a green—*i. e.*, a yellow old age. Even in their infancy they are continually getting in a pickle, and are no comfort to themselves nor anybody else. The onion is a confirmed invalid, and if it leaves its bed it is sure to get in a stew. It prides itself somewhat upon its rank in society, but it is in bad odor among its fellows.

We defy you to prove that tomatoes produce cancers—we don't believe you cancer, in fact we know you can't sir.

Room for the Chinese at Home.—We very often talk of the over-crowded millions of China, but it appears that there is another side to the story. The statement is now made that the Governor of the Province of Che-Kiang has lately proclaimed that though seventeen years have elapsed since the Taiping civil war ravaged the country, large areas have since remained untilled. In three named departments 1,600,000 acres are idle, and in three others 6,000,000 acres. Some of the land is poor, but at least 5,500,000 uncultivated acres are rich and fertile.

A New System of Bell-glasses.—We have examined a new system of bell-glass, the parts usually left open closed by a disc, and destined to hasten the maturity of fruit. In order to use it, the fruit at the time it commences to form is introduced at the superior extremity which presents a small opening. Thus enclosed, it grows rapidly and is defended from the attacks of birds and insects. When the fruit is ripe, the disc which encloses the bottom of the glass and the fruit is taken out, being considerably hastened in ripeness.—*L' Illustration Horticole.*

The Rain Tree of Jamaica.—The Consul of the United States of Colombia, for the department of Loreto, Peru, wrote to President Prado, during the year 1877, giving him curious details concerning a tree that grows in the forests in the neighborhood of the city of Moyobamba, This tree, called by the natives Tamaicaspi (rain tree), is endowed with remarkable properties. It is about eighteen metres high when it has reached its full growth, the diameter at the base of the trunk being one metre. This tree absorbs and condenses the humidity of the atmosphere with an astonishing energy, which is constantly seen trickling down its trunk and falling in showers from its branches, and in such abundance that the surrounding soil is converted into a veritable morass. The rain tree possesses this property in a very great degree during the summer season, chiefly when the streams are low and water is scarce. The Consul of Loreto proposes that the tree be planted in the arid regions of Peru as a great benefit to agriculturists. Such are the first and too brief notes concerning this tree with which we are furnished by the *Moniteur de la Guyane Francaise*, which it takes from the official journal of the metropolis.

The *Gardener's Chronicle* of December 28th, has given further particulars, informing us that the tree in question is Pithecolobium saman, Benth., a species to which we believe we may give the following synonyms: Inga salutaris, H. B. K; Inga saman, Wild.; and Mimosa saman, Jacq. It is perhaps also one of the Bois Madame or de Dame of the French Antilles. According to the report of Mr. Jenmann, Superintendent of the botanical garden at Castleton, Jamaica, it is a tree 70 feet high with a top 130 feet in diameter, covering in consequence a large surface of soil, which it waters with the moisture condensed by its foliage. Its fruit, in the form of a pod, has the same nutritive qualities as the carobs of Europe and the sweet peas of the Antilles, as food for stock. We will add that its bark is astringent and that it is stated that it has been used in Germany for that purpose. It is certain that it is prized in the Antilles, where its use has given it the common name which it there bears in common with several of its congeners. It is said that the wood is hard and fine grained. The same journal mentions, in connection with the sending of the seeds to India by the authorities of Jamaica, the complete success of the acclimatization of the species in question. The latter fact is especially asserted by one of the growers who has obtained plants eight to thirteen metres high, only two years from the seed, and that in the most arid part of India. After the various properties attributed to the Saman, we judge it well adapted to shelter coffee and cocoa trees from the ardor of the sun, and we recommemd it particularly to the planters of Reunion to replace the *bois noir*, often attacked by disease.

Finally, in closing, let us say that the remarkable properties possessed by the Saman of condensing aqueous vapors, is not confined specially to it, on the contrary it is common to a certain number of species of warm climates. Thus the banana notably sprinkles the soil with drops of water condensed upon its vast foliage; but the most extraordinary fact known is furnished by the Garoé or Holy tree (Laurinée) of the Island of Fer (Ile de Fer) of the Canaries, of which the product of condensation was at one time caught in vessels for the use of the population.—*Translated for the "Horticulturist" from L'Illustration Horticole.*

Pomological Notes.

It is a good old adage "not to carry all your eggs in one basket," but Californians do not heed it very much. If you have an orchard of only one or two varieties, not only will it all be gathered in a very short time, but if the fashion among canners and driers changes, you will find it is no longer profitable.

CURE FOR THE YELLOWS.—A man at Northfield, Mass., who has for years tried the experiment in his orchard, says that to cure peach trees of "the yellows," the best method is to pour boiling water over the limbs and body of the trees afflicted with that disease, the remedy to be applied in spring, summer and autumn. It will not kill the bark.

CURRANTS.—The *Rural New Yorker* gives a plate of a new seedling currant raised by Mr. Lincoln Fay, of that State, and called "Fay's Prolific," which is said to be much more prolific than the cherry currant, and of better quality. The bunches are represented as being fully six inches long, and well filled. It is said to have been one of many thousand seedlings, and the only one retained.

A SINGULAR FREAK OF NATURE.— We received a sample of fruit from Mr. E. Morris, of the Fonthill Nurseries, which grew on an early harvest apple tree. It has the form and general appearance of a pear, being most symmetrically pyriform, but having the odor, texture, and flavor of an apple.—*Ex.*

FRUIT AND FRUIT DRYING ITEMS.—Five pounds of green apples will make about one of dry, varying somewhat with the quality of the fruit.

When raspberries fall below seven or eight cents per pound, it is probably more profitable to dry them.

Many plums are clingstone at certain periods of ripeness, which in a different condition part readily from the pit.

A plum that is thoroughly ripe, dries faster and is better when dry than one partly ripe.

If you propose planting an orchard this winter, consider one or two things. If you plant only one or two varieties, the fruit will all be ready for market at once and either you must employ a great many men at a season of the year when labor is high, or your fruit will go to waste.

THE HUCKLEBERRY. — Under culture the bush bears with great profusion, while it is long lived, and too hardy to be injured by the cold of the severest Maine winter. It does not require high culture nor very rich soil, but needs to be planted where it can get the full blaze of the sun. A recent writer says that he has grown his plants by transplanting them from wherever he found them growing wild, and has not made any experiments with sowing the seed, yet he says that the seeds produce distinct varieties, varying in size and flavor, and also varying in color from black to almost white. Will not some of our readers take this matter in hand and experiment with plants in the garden from the wilds, and also in raising new sorts from seed? It is a new and quite untrodden field, and on that account one of much interest. The berries can be crushed, mixed with fine sand, sown on a well pulverized bed, and covered with fine pulverized mould, where they will grow, and the plants remain the first year. The next season the young plants should be set out in the open ground where they are to grow and fruit. Doubtless the result would be a decided improvement in the size and quality of this popular fruit.—*Exchange.*

Reviews and Exchanges.

ARBORETUM SEGREZIANUM. — Mons. Alphonse Lavallee, who is the president of the Central Horticultural Society of France, has sent us the first part of his "Icones Selectæ Arborum et Fruticum in Hortis Segrezianis Collectorum." This book is published by J. B. Bailliere & Sons, of London and Paris. In the present number are elegant plates of Juglans Sieboldiana, Ostryopsis Davidiana, Elæagnus langipes, Cratægus cuneata, and Jamesia Americana. These are all illustrated from specimens grown in Mons. Lavallee's tree-garden on his estate at Segrez. The descriptions and the typography are in every respect worthy of the plates, and, all in all, the book deserves a wide sale. It attracts the attention and elicits the commendation of all who visit our office.

THE FLORIST AND POMOLOGIST.—The June number of this fine monthly contains a plate of a new hybrid rose, "Her Majesty," which is a strong grower and indicates a new type, having the foliage, growth, etc., of the hybrid perpetuals, and the glossy leaf-surface of the teas. It is said to stand in the front rank of light roses, the flower being large, soft, and clear bright-blush pink. The other plate represents three of the now double hardy azaleas.

THE AMERICAN GARDEN.—

This is a quarterly which was formerly published by Beach & Sons, but is now owned by B. K. Bliss & Sons, and is edited by that well known old horticulturist, Dr. F. M. Hexamer. We have received two numbers, those for April and July, and we hail them with a warm welcoming word. It is a neat, pretty journal. In the April number that quaint and wise child-poet, Dora Read Goodale, has a lovely little poem about Mother's Garden. There are articles on strawberries, pears, new flowers for 1880, the wild garden, summer bulbs, window plants, household pets, and many other interesting subjects. We recognize familiar pens, and find something of interest on every page. It is a publication which ought to succeed, as indeed we are quite sure it will.

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AND

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THE KIND OF KNOWLEDGE NEEDED FOR CALIFORNIA GARDENS.

By R. J. TRUMBULL, San Francisco.

Flowers plead their own cause. Everybody likes them, but everyone does not love them with equal fervor. In some persons, so weak is their love for these sweetest of earth's beauties, that it is expressed in words of admiration alone, willing that anybody other than themselves shall care for them. But many there are whose love for flowers rises to the dignity of a noble passion, leading them betimes to forsake duties that they may work away and enjoy their pets. The writer is acquainted with a lady who, if missed from her accustomed place in the home circle, is sure to be found in her little conservatory. Here she spends her spare minutes, and the degree of pleasure which she enjoys in watering, training, and noting the development of these—to her almost intelligent objects—can not be expressed.

It is not true, so far as our observation goes, as some writers have intimated, that Californians are indifferent to the cultivation of flowers, nor do we think that we are behind any of our sister States in the matter of taste. We recently traveled through some of our beautiful valleys, and everywhere found evidences of increasing interest in the cultivation of flowers. Where no signs of vegetable gardens could be seen the rose, the dahlia, and the hollyhock, and often other more delicate flowers would be found. And in considering the difficulties in the way of growing these, that the water necessary for their existence had to be pumped by hand, carried several rods and sprinkled on the plants, and the soil to be cultivated, in most instances, was of a stiff, almost untillable character, we were compelled to believe that the evidences furnished manifested a degree of enthusiasm not elsewhere excelled.

It is not an easy matter to maintain a flower garden throughout our dry and hot summer weather, though one may be favored with peculiar advantages. East of the mountains the atmosphere is charged with moisture during the growing season, and the rains which fall at almost regular intervals preclude the necessity, except in rare instances, of artificial watering. Here we, in a sense, are obliged to work against nature, and the wonder would be, were it not that the love of flowers is so universal among us, that so many willingly undertake their culture.

A more general knowledge is needed, and the details more minutely described, to make flower culture easier and a greater success in California. Especially is this true in regard to growing annuals and biennials. "Times and seasons" must be considered. Eastern methods will not generally prove successful if practiced here. Information, based on home experience, would, we are sure, be gladly welcomed and gratefully appreciated by many. The descriptions of flowers and suggestions as to their cultivation, furnished in seed catalogues, must of necessity be very brief, else the almost endless number and variety to be described would occupy so much space that the expense of printing would be so great as to preclude their publication. Hence, it is to such as your valuable monthly that we must look for the information so much desired. It should be known that a variety of seed which when properly planted ought not to be covered more than one-eighth of an inch, can not be buried to the depth of six inches without causing death to the germ; and that fine seed, when properly sown, should be simply scattered on the surface of the soil, but can not be exposed to the scorching rays of the sun without being destroyed.

Plans for laying out small gardens and the names of plants given best adapted for "bedding out" would be acceptable to many of your readers. Ribbon bordering is very largely practiced in Europe and in the Eastern States now, and by a goodly number of our more wealthy Californians. Effects may be produced by "massing" with suitable bordering that are simply gorgeous. Occasionally we find persons who, without any professional training, but because of their native taste, can "bed out" plants whose flowers, though dissimilar in form and color, yet produce a harmony that affords a high degree of pleasure to the eye; but he who succeeds best in making beauty more beautiful must have his taste educated. It is not every man, whatever his intellectual ability may be, who can be a successful gardener. As well might one say that any man can be a successful artist. He who thoroughly understands the nature of his plants and the methods suited to their most perfect development, and arranges, intermixing, grouping, or massing them, with the object of producing variety and the highest degree of harmony in color, and does this well, is himself an artist, and is quite as much one as he who copies nature on canvas. Genius educated makes either a success in his calling; but without education either will prove himself a failure.

What we would plead for is a series of articles which will embrace simple plans for small flower and vegetable gardens, that may be of service to most of our people, with minute descriptions of leading flowers, how to grow them from seed, or propagate them from cuttings, and how to plant or "bed them out." The rich employ skilled men, and in consequence generally have tasty, showy gardens. But there are principles which might be easily described, readily understood, and willingly practiced by those not in circumstances to employ educated help, and that would greatly improve the character and appearance of our California gardens. Who will write these articles?

Such crops as Jerusalem artichokes, rhubarb, seakale, and horse radish, may be got in. For the last three, deep rich soil should be chosen, as they will remain several years on one spot.

STRAWBERRIES IN PLACER.

By E. B. Silva.

The past season has been a profitable one for strawberry growers in our foothills. The crop was large and of such good size and quality that excellent prices were realized. It is perhaps in order to speak of the causes which contributed to these results. Copious rains late in the spring are nearly always followed by a good strawberry crop. These rains were not followed by the usual harsh drying winds, and the vines grew steadily without check, and few of the berries were blasted before ripening. No hot drying winds prevailing in midseason the berries all grew to full size before maturing.

The Monarch of the West is now one leading variety, but it is lacking in some qualities so requisite that it must be soon superseded. It is of the largest size, and the quality is excellent. It is fine for home use or a near market. It is a vigorous grower, and holds its vigor for years. It is too dull in color for a market berry, and is not firm enough for shipment to distant markets. In productiveness it is excelled by many varieties, and this is an item to be taken into consideration where many of our gardens have to be cultivated by hand, and water for irrigating is so expensive.

Our growers are on the look-out for a variety that will fill the requirements of the market. Our soils are so varied in character that a berry that succeeds with me may prove a failure with my neighbor. We have many varieties in cultivation, and are constantly adding to the list. Some prove of little value and are promptly discarded, but among the more recent introductions are many of real merit. Among the older varieties Seth Boyden stands in the front rank, and in my opinion it is equaled or excelled by but few of the new varieties. It is of large size, firm and handsome, and gives good satisfaction in the market. It is a heavy bearer, and the vine is vigorous and healthy.

President Wilder is one of the handsomest and finest flavored berries in existence. In favored localities it is an abundant bearer of large beautiful berries. It will amply repay the family who carefully cultivate it. Mr. Roe speaks very highly of the Wilder.

Crescent Seedling, perhaps the most productive of all in the East, fails miserably with us. It does not bear enough to pay for picking, and the berries are small and inferior. Such is indeed our experience with all the pistillated varieties, but we have good reports of their behavior in some parts of this State.

Duchesse is a good berry, of fair size, and very vigorous and productive, but during the past two seasons has blossomed so early that it has been badly injured by frosts.

Great American was so highly lauded when first sent out that, when it did not bring such results as had been promised, it was neglected; but this spring it brought us a large yield of large berries that would compare in beauty with the handsomest. They had the appearance of having been treated to a coat of varnish. They were a favorite in the market. They are not highly flavored, but have a pleasant flavor; they will not do for a distant market, the skin of the berry being very tender. The vine is small, but has not shown any lack of vigor.

Cumberland Triumph is a very large, handsome berry, vigorous and moderately productive, and a variety well worthy of a trial everywhere.

Prouty's Seedling and Kerr's Prolific

are productive and good. Captain Jack is the most productive of all. It yields an immense crop of very regular shaped berries, and holds up well in size to the last. The vine is vigorous. The berry is firm, but of poor flavor. One of our best market sorts, President Lincoln, is a berry of the largest size, generally productive, and of good flavor. A good variety for home use.

Forest Rose ripened several days in advance of the earliest last spring. The berries were of good size—above medium—very firm, and of excellent flavor. The vine is very vigorous, and immensely productive. We picked seventy-three one-pound baskets from one row ninety feet long. It promises to be a fine early variety for home use.

Miner's Great Prolific deserves a place in every collection. The plant is very vigorous, "and so enormously prolific that the berries are literally heaped about the plants." It is of large size, and good flavor, and quite late.

Sharpless proves, so far, to be all that is claimed for it. It is certainly the largest of all berries. The flavor is excellent. It is a prime favorite with the birds. It is not firm enough for shipment to distant markets, but will be a fine variety for a near market on account of its large size and handsome color. It is a rapid grower, and very productive. Plants set out in September last yielded a pound to the plant the following season.

Glendale, a very late, vigorous, and productive variety, of rather poor flavor and not a handsome berry, but its lateness and productiveness should make it a profitable sort for market. It is very firm in texture. Of the many new varieties sent out last spring, and which I have not seen in bearing long enough to form an opinion of, Bidwell, Marvin, Huddleston's Favorite, Longfellow, Warren, Garden, and Red Jacket, all promise well, being strong, thrifty growers, and showing some fruit of good size the first season of planting. I have told just what the several varieties are and do with us. Perhaps the experience of growers in other localities differs from ours—there is no fruit which location and soil affects to such an extent as it does the strawberry. A change of soil may change the principal character of a variety. We should therefore all experiment. It costs very little to procure and test a few plants of several varieties each year; by so doing we may hope to find something even better than we require. Perhaps there is no variety without some merit. Mr. J. T. Lovett in his catalogue mentions one hundred and eighteen varieties, and I have no doubt each variety has some good trait in its character to commend it.

There must be still further improvements in our varieties of fruits. Many careful cultivators are turning their attention to this branch of horticulture, and we see the result of their labors in such grand varieties as Sharpless, Seth Boyden, etc. Our wish is that success may attend their efforts.

STRAWBERRY CULTURE IN NAPA.

By R. W. Bell Napa City.

I shall premise by stating that my soil is a heavy loam, and that I irrigate on the surface, covering the space between the rows with mulching.

I began operations with nine varieties, all said to be first class, viz: Monarch of the West, President Lincoln, Pioneer, Great American, Great Prolific, Princess Dagmar, Seth Boyden, Cinderella, and Crescent Seedling. I tried the Princess Dagmar in Santa Rosa for two years but had little result, and having no better success here I dug

them out. The President Lincoln, though sweet and large, seems unsuited to our warm dry summer, and, unless picked when ripe, soon acquires a stale and bitter taste. I found Cinderella and Crescent Seedling too small and of rather poor quality, though productive. So I let all of the above varieties die out.

The Seth Boyden is large and of excellent flavor. Like all very sweet berries it needs a great deal of water. It bears transportation well.

The Great American is a firm and handsome berry, not very prolific unless under good cultivation and in very rich soil; then, with runners kept cut off, it yields large crops of fine berries of enormous size. Still, I do not recommend it for general planting, as it has disappointed so many.

The Great Prolific is well named, yielding in great abundance fruit five to six inches around. The flavor is good, but the berries are too soft for shipping great distances. I would recommend it as a good berry for home use or near markets.

The Monarch is very prolific and suited to every variety of soil; berries nearly all large, of good quality, and will bear shipping great distances.

The Pioneer is vigorous and productive; berries firm, sweet, and large, many specimens six and seven inches around.

Last winter I got a few plants of the the celebrated Sharpless variety. The plants are vigorous growers on all soils. The few berries I got were of medium size, had an exceedingly fine flavor, and seemed firm enough to ship fifty or one hundred miles. Eastern growers report the average size of these berries to be about six inches around, some eight, nine, and even twelve inches in circumference.

RESOURCES AND FRUIT OF PUGET SOUND.

By W. M. Lee, New Tacoma, W. T.

I was handed a copy of the California Horticulturist by Mrs. Blackwell of this place, requesting me to contribute a few notes to your magazine in regard to the resources of Puget Sound. This lady is a great lover of flowers, and is the happy owner of several hundred varieties of flowering shrubs and plants of which she has the sole supervision. Nearly all the tender roses and half-hardy shrubs will stand our mild winters, and all the varieties of house-plants are at home here, blooming to perfection and in great profusion. Our giant forests that have been invaded by the axe, are replete with a succession of flowering shrubs and plants that gladdens the heart of every wanderer.

Puget Sound, the great arm of the sea, extends out many bays and arms of her own that are fed with numerous rivers and their tributaries. These streams are skirted with some of the richest bottom lands on the continent, yielding large crops of hay, grain, hops, fruits, and vegetables of all varieties. These rich valleys are generally covered with vine-maple, alder, willow, crab-apple, and cedar, and are easily cleared at a cost of from five to twenty dollars per acre. The agricultural resources of these beautiful valleys are in the main undeveloped. There are none, perhaps, that can rival the Puyallup in productiveness or improvement.

The upper rolling lands are generally covered with heavy fir timber. The soil varies from a sandy loam, to a strong productive clay. There is much excellent land in this class, but it is more or less detached and cut into small farms. Under good cultivation this class of land will raise excellent

cereals, vegetables, grass, and fruit—in fact it is the best for fruit and fruit trees. The fir timber is easily burned by putting the logs at right angles, which forms a chimney that is easily ignited by the torch. The climate is all that one could ask for; the summers are cool, and there are occasional showers.

The winters are mild and moist, with very little frost or snow. Grass is growing the year round, and flowers are often blooming in the open ground in mid-winter.

As a grass country the valleys are probably not equaled in America, cutting from three to five tons of timothy hay per acre, worth ten dollars per ton. These, combined with pure soft water and mild winters, make it a very desirable stock region. Vegetables take readily to our soil and climate. Cabbages, turnips, beets, carrots, parsnips, peas, potatoes, and onions, are all produced here in abundance and to perfection.

Our immense coal fields of superior quality, and mountains of the best lime-rock, our iron mines, lumber trade, fishing interests, agricultural products, with the best harbor and climate in the world, make it a desirable place for one to build up and beautify a home.

In the vicinity of New Tacoma the climate is greatly modified by the ocean winds which are felt throughout the Puget Sound basin. This is the reason why we can raise nearly all kinds of fruit to perfection in this northern climate. It is safe to say that this whole district will produce apples, pears, plums, prunes, cherries, quinces, peaches, apricots, nectarines, almonds, and the whole berry family in abundance and in great perfection. The valleys are well adapted for blackberries and raspberries, which are raised with little effort, canes of the former often reaching twenty-five feet in length and literally covered with fruit.

Large crops of strawberries are raised here on the fir lands, and of a better quality than those grown in the rich valleys. The leading varieties are Monarch of the West, Wilson's Triomphe, Jucunda, Great American, and Seth Boyden.

Currants have in every respect proved a success here, bearing large crops of fine fruit. The Cherry, Red Dutch, White Dutch, Victoria, and Black Naples, are the standard varieties raised. Gooseberries, also, are at home here, bearing enormous crops of fine berries free from mildew and other diseases.

The grape has not been fairly tested here. It is generally conceded that the climate is too damp for general success; however I have seen some fine specimens raised in this county. The Concord, Delaware, Isabella, and Black July are raised.

We have the Japanese persimmon on trial; they have been planted two years, the trees look well, and seem to be adapted to this climate. As they have not come into bearing, it requires further trial to determine whether the fruit will mature here. I would make the same statement in regard to almonds.

Peaches are quite generally grown in both valley and fir land. This climate is hardly warm enough to bring this delicious fruit to perfection, yet in sheltered places or a little protection in spring to keep the cold winds from curling the leaves, good crops of fine peaches may be raised. The varieties raised are Golden Cling, Alexander, Louise, Crawford's Early, River's Early and Hale's Early.

Nectarines and apricots are making a fine growth, the trees are healthy and

bid fair to repay us with their delicious fruits.

The cherry is largely grown in this locality and the trees bear young and abundant.

The plum and prune are attracting much attention here, and are extensively planted for drying and other purposes. The climate and soil are well adapted to this fruit and growth of trees (the rolling or fir lands taking the preference), and the fruit is free from the ravages of insects. Our best plums are the Peach, Bradshaw, Columbia, Washington, Coe's Golden Drop, Green Gage, Reine Claude, and Imperial Gage. Of prunes the Italian, Prune d'Agen, Hungarian, and Fellenburg, are those mostly cultivated.

The apple is raised here with success in every variety of soil; the fruit attains a good size, is fair, and retains that sprightly acid quality of the northern States. The trees bear very young and abundantly, hence they do not live as long as the Eastern tree.

Pears are a staple crop, the trees living to a great age, and flourish equal to a fir. It thrives everywhere in this Territory, and bears enormous crops of perfect fruit. Many are turning their attention to choice varieties that will bear transportation.

MEXICAN RAMBLES.

By J. W. G.

We left Tepic on the morning of the 19th of January, and with feelings of sadness bid adieu to our friends and turned our faces eastward. And as we rolled over the long and wiry road toward the city of Mexico, how our hearts yearned toward our old Pacific home. Most of the road to Guadalajara from Tepic is very rough. The country through which we passed was not devoid of interest, as we were all the time ascending the Sierra Madre — passing in this mountainous region many villages and towns, and in the deep gorges, where there were small villages, the entire ground was cultivated, sugar cane and onions being the principal product. On the third day we reached the *barranca.* This is the last ascent before overcoming the principal chain of the Sierra Madre, and is the most difficult. At the foot of this steep declivity is a little village by a clear running brook; here we rested and took dinner before attempting to ascend the mountain. The road up this mountain, which is partly hewn in the solid rock, is of such a zig-zag shape that the mules can not be used on account of the short turns. The diligence is therefore worked up by hand, several natives being employed for that purpose. The passengers walk up.

In an hour and a half we reached the summit, and we stood on the high central plains of Mexico. A vast region of barren and stony country lay before us. But the road was excellent, in many places well macadamized, and all the gulches and streams were firmly bridged with substantial stone bridges. We passed some large cattle haciendas with immense inclosures built of the round stones which in this region cover the surface of the earth. The estates have a dilapidated, ruined, and forbidden appearance, with not a tree about them, or any signs of civilization.

About sundown we reached the town of Magdalena, situated near a lake by that name. It is an old place, and mostly in ruins. It has a deserted appearance and is principally inhabited by blanketed Mexicans with hats of immense brims and little crowns. We left this miserable place about 3 o'clock A. M. About 10 o'clock A. M. we reached the city of Tequile. This is the most

thriving and busy place we had met with yet. It is the great manufactory of the universal drink of the Mexicans, known as *mescal*, distilled from the Maguey plant which in this locality seems to be the best in Mexico.

The Maguey, or American Aloe, or Century plant, reaches maturity in about seven years. The *mescal* is distilled from the root after first being roasted in the ground. When roasted, it is quite sweet and pleasant to the taste; the juice is then pressed from it which is almost as thick and sweet as molasses, and I have no doubt that sugar could be manufactured from it cheaper and superior to beet sugar. The plant grows wild in every portion of Mexico. It is also planted in large fields, but needs no cultivation to make it grow luxuriantly. It seems to thrive best upon what appears to be a barren soil.

Nearly the whole city of Tequile is made up of distilleries, and long before you enter its precincts you can smell the fumes of this horrid liquor. The town is situated in a deep valley, and the ascent to it is very abrupt; the road however is well paved. As usual in all Mexican towns, immense churches rise even here, above the flat-roofed buildings, the bells of which seem to be always ringing. The population is said to be about 15,000.

After partaking of some refreshments, we again started on our journey to Guadalajara. The ride was interesting, the country being quite barren of trees of any size. A few stunted oaks and pines or mesquit bushes seemed to struggle for existence in a poor soil. A species of coarse grass conceals the poor land, in which vast quantities of black stones crop out. The eternal cactus of every quality and the Maguey plant are ever before you; while in the distance rise from the plains rugged and isolated mountains, the sides of which are covered with stunted oak and pine. As we approached Guadalajara in the evening, the spires of the numerous churches could be seen at a considerable distance. In entering the environs of the city every house seemed to be in ruins, but towards the grand plaza it presents a fine appearance. There are many large buildings both public and private, and the streets are well paved and clean.

About eight or nine leagues from Guadalajara we crossed the Rio Grande. This is the longest river that runs toward the Pacific. It flows from the great lake of Chapala eighteen or twenty leagues south of Guadalajara, and reaches the ocean a short distance north of San Blas. As it nears the sea the name is changed to that of Santiago, and it pours through some very fertile regions. Where the road encounters it, the rapid current is spanned by a stone bridge. It was at this bridge that a great battle was fought in the Mexican struggle for Independence against the Spaniards. The Mexican troops, mostly Indians, were headed by the famous priest Hidalgo, who first raised the standard for independence, and whose heartless cruelty against the Spanish prisoners, who were so unfortunate as to fall a prey to his brutal revenge, leaves a dark stain upon his history, which might have been as bright as some of our revolutionary heroes.

The road is kept in good repair and the streams and gulches are bridged with firm stone bridges, well built, the solidity of which can not be surpassed in any part of the world. Some of the bridges are of very ancient date. The country through which we pass after leaving the Rio Grande has rather a

barren aspect. At night we arrive at the hacienda de la venta.

In due season we reached the town of San Juan. This city is built in a deep ravine, and the most barren and desolate region surrounds it that we had yet seen. The buildings, which are mostly of stone, are massive and very ancient. The stupendous church of San Juan rises above all. The people have a starved and hungry look. With their broad brimmed hats drawn over their eyes and enshrouded in their dirty blankets they sit listlessly watching every thing with sinister eyes. At every place the stage is surrounded with beggars. The halt, the maimed, the blind, the leprous, all crying out: *Caridad por el mor de Dios, una claco por los Santos.*

The buildings of this city, and its great churches, in such a rough and barren place, seems to have been a strange freak of the early priesthood. There are no signs of cultivation, and how the people live can hardly be guessed. San Juan's day (24th of June) is celebrated once a year, and then the place is quite lively.

Traveling over a rough country after leaving San Juan, we reached San Juan de Largos, an ancient city, situated in a beautiful valley, which is well cultivated. We saw here more thieves and murderers (happily with ball and chain) than at any other place we had seen in Mexico. From this place we had our usual early start—that is before daylight. We passed many large towns and villages and entered the famous mining town of Guanajuata, where, for the present, these wandering reminiscences must terminate.

Peas are the chief crop demanding attention. Two sowings of these should be made during the month.

A SAUCELITO GARDEN.

By Marcia D. Crane, Oakland.

Saucelito is built on a peninsula, and in going over on the ferry-boat from San Francisco, we cross the track of ocean-bound vessels that are moving toward the Golden Gate As we are borne along we have an opportunity of stealing quite a glimpse of the wide ocean. Saucelito proper consists of a few frame houses and railroad buildings grouped at the base of the hills, almost on the wharves. A road has been cut out along the water's edge to the San Francisco Yacht Club House, and old Saucelito. Other roads wind upward through the wooded hills and cañons. Saucelito is not only a spot well known for its pleasant and beautiful homes, but particularly noted for being the garden home for flowers In making gardens in this place the great wealth of native ferns leads flower lovers to picture to themselves all sorts of beautiful rockeries, and also to improve the opportunity offered and gather their rocks, mosses, and ferns, from the surrounding cañons. Ferns transplanted from their shaded nooks to their native soil in some other spot are generally raised without difficulty. They do not even seem aware that they have been moved. Dear tender ferns! Often we imagine that they do miss their old associations of rock, and stream, and mossy bank, and we breathe a little weary sigh as they flutter in the wind, and look about on their new home, but if they are homesick they do not stop growing to look back on the past, but go steadily onward, thriftily beautifying their small allotment of ground.

On the ridge of an unprotected hill, that commands an exceptionally fine view of the dancing waters of Richardson's Bay, we found the charming gar-

den of Mrs. James Behrens. The large yard is filled with groups of small oak trees, and wild flowers and ferns are scattered about, growing in the carelessness and freedom of their natural state, they never having been disturbed from the rocky soil. The flower garden is on the sloping hillside, to the east of the house, and is an oblong shaped plot of ground, inclosed on the road-side by a high lattice-work fence, which style of fence is repeated on the inside, only being about half the height. At one end the garden is walled in by the low-roofed kitchen, over which climb the white La Marque and double Cherokee roses, intermingled with Heliotrope and the tangled wealth of the Madeira vine. The smoke from the chimney does not seem to injure these venturesome vines at all; but they defy all sorts of weather, and each one seems struggling to gain the ascendency by thrusting a tendril that will over-reach that of each neighboring rival. The protective surroundings of this pretty garden render it secure from the spiteful attacks of frost, and it can be pronounced the home of the Pelargonium and Geranium. We counted seventeen different varieties, many of which are very beautiful, and we were informed that they grow most luxuriantly all the time, the frost never reaching them. Several Heliotropes scatter their pleasant fragrance abroad, one of which grows up through the centre of a rose geranium, and although exposed to the constant sunlight, it seems to thrive. The hardest frost of last winter only touched the Heliotropes, one blossoming all through the winter over a tub of water that was frozen over many times. And the Rose Geraniums! Three beautiful trees, each of them from four to five feet in height, struggle through the lattice-work of the fence as if they longed for the freedom of the outer world, so they spread their branches out delighting the fond gardener with their beauty and fragrance. Two twisted oaks hold their tops above the garden. One is about twelve feet high, and is covered with honeysuckle vines that clamber to the uppermost branches; and the other one, not quite as tall, is wound in the close embrace of a beautiful red Fuchsia that continually surprises the beholder with lovely clusters of drooping flowers, which are so mixed with the oak leaves that one forgets the climbing flowers are there until they are seen peeping brightly from the lofty bower. A wonderful Begonia had just finished its life at the time of our visit to this garden. This Begonia was one of the pink variety, and grew close by the kitchen window. We had the pleasure of seeing it laden with blossoms several times. It was almost a perpetual bloomer, and after being in the ground four years, and attaining the remarkable height of four feet and a half, it withdrew from its many admirers, and now another flower blooms in the spot, and the begonia is but a memory.

A friend of the family one day noticed a caterpillar feeding upon the leaves of a Camellia inside a florist's window. Being interested in entomology he purchased the plant and took it home. The caterpillar fed upon the leaves until the plant seemed nearly dead, but one morning it was found missing. Now, whether the too frequent glance of a lady botanist had anything to do with the untimely departure of the caterpillar, we will not pretend to say, but it is certain that she had watched with sorrowful eyes the beautiful plant, cherishing much fonder feelings for it than for the caterpillar. The lady then asked for the now useless plant, and gathering the poor thing to her arms, she

planted it in a pleasant corner of her garden where the faces of many flower friends could beam upon it and encourage it into new life. The long tortured Camellia seemed to like its new situation and began to breathe easier. There were many satisfactory nods as they saw the fresh leaves unfolding, and a positive jubilee as the buds began to swell and burst into beauty. The Camellia now held up its head with undisguised pride, and during the cold snapping weather at Christmas time we thought its evident pride quite pardonable as it showered forth a glory of one hundred and fifty large red perfect blossoms. What a beautiful sight! It could scarcely have chosen a better time to meet with appreciation. The plant has been separated into two since and both are growing well.

There are also two other varieties of Camellias growing in the garden; a white one and a pink one. Eight varieties of fuchsias and sixty varieties of roses are scattered about the place in different parts. The tiger lilies by actual measurement were a few inches over seven feet high, so tall that we had to look twice before we could believe they were tiger lilies.

The snails have always been a great source of trouble to flower lovers in Saucelito, being very destructive, but they are large and easily detected if care is taken. Some toads were brought home from Shasta, after a summer trip, and turned loose in the garden. Since their advent the slugs seem to have disappeared.

A New Zealand tree-fern with long broad leaves, graces the centre of one of the flower beds. Particularly bright and saucy are the Oxalis when in bloom. There are three varieties of pink, one perpetual bloomer, and a bright yellow one; also three native varieties, a pink, a pale purplish pink, and a yellow one.

In the gnarled roots of an ancient oak, with branches and leaves forming a secure canopy against any unwholesome freaks of Boreas, is nestled one of the crowning beauties of the whole garden, and that is a charming rockery. It is the natural place for a rockery, being on the southeast side of the house, sheltered from the winds by the close fence on one side and the kitchen on the other, while above the low-spreading branches of the oak admit the penetration of just enough sunshine to strengthen the growing ferns. The night dews and the fogs drift upon the kitchen roof and drip down from the eaves upon the vegetation below, so that it seems the very nook for tender ferns and creeping vines. The moisture, sunshine, shade, and rich earth in proper proportions are none of them lacking, and the lovely collection of ferns, thriving so unexceptionally well, are a constant source of pleasure. The ferns were for the most part gathered from the cañons and glens about Saucelito, while four or five very fine and delicate ones were gathered in Shasta County. Tradescantia and Lobelia clamber among the rocks with the ferns, and the whole cluster is very refreshing. The old-fashioned Mignonette holds its own among the Nasturtiums and Pinks. Polyanthus is planted to form the borders of the flower beds together with native rocks heaped up in a natural way. Besides making the garden picturesque, this plan affords a delightful and welcome soil for many of the plants that crave the rough crevices of rocks, in and out of which they love to twine their roots and tendrils.

The Schumaker Peach is spoken well of by the best authorities. It out-ranks the Alexander in point of earliness.

A TRIP TO THE SIERRAS.

By F. D. Soward.

To the lover of nature a tour to the Sierras is always attended with pleasure; the mind is kept active by pleasureable and quickly changing thoughts, and the physical frame glows with health and energy. In the latter part of June we started on a tour to the mountains. We were four in number, and we chose the unceremonious method of "camping out." Our entire baggage consisted of little else than a frying pan, a few quarts of flour, several blankets, and a little bacon and salt. Guns, ammunition, two horses and a light wagon, completed our outfit. This one planned to climb the Downieville Buttes, gaze upon the distant Sacramento Valley, and return with delightful visions, and laden with unknown flowers plucked from the margins of perpetual snow. That one was going to draw from the crystal bosom of some mountain lake the silver trout in countless numbers, and feast upon them by the merry light of our camp fires.

For a time the elements seemed to combine against us. The dark red dust arose around us almost to suffocation, and the sun poured hot rays upon our heads with such vehemence that our party began to murmur over much. There was nothing to cheer the desponding thoughts, and there was scarcely a sprig of green for the eye to rest upon. Our lofty air-castles began to topple and fall. We looked upon our pleasure excursion as a farce. But the snow-caped summits of the Sierras loomed up before us, and furnished a balm to our desponding spirits. The level plain gradually gave way to rugged slopes, and the brown and parched growths faded into dark green forests, fringed by luxuriant grasses. Our depressed spirits began to revive, and before the close of the first day, we realized that ours was indeed a trip of many pleasures. We journeyed on and found the surrounding scenery constantly growing more grand. We wended our way among lofty peaks, and down the sides of deep cañons; now on the brink of some stupendous precipice that overlooks the turbulent waters of Yuba, then moving quietly along the base of a mighty mountain. The sun reached the meridian, and our first camp fire was lit. We stopped by a little rivulet fringed by willows and were introduced into our new mode of living.

The present rivers of the Sierras, now nearly parallel with each other, leave the summit at right angles. Ridges are thus formed which extend in an unbroken line from the summit to the foot-hills. In traveling from the Sacramento Valley to the summit, the worst roads are encountered in the foothills; for here the roads cross from ridge to ridge, and follow no general line of ascent; but when once on the top of the ridge, the ascent is gradual and the roads are beautiful. Were it not for taking advantage of those natural highways, it would be almost impossible to construct a wagon road across the summit. For some time our course led us along the "divide" between the north and the middle forks of the Yuba, enjoying the freshness of the mountain air, and the picturesque scenery. The country was rough and covered by forests of pine, fir, and cedar, interwoven with a heavy growth of chaparral.

The main points of interest in this vicinity are the mining towns. Some of them are on the decline, and seem to have lost much of their former notoriety. The first of these that we came to was Camptonville, a town of flower

gardens. This beautiful little village has something of a dilapidated appearance about its business centres, but is beautifully situated on the ridge, about midway between the two northern forks of the Yuba. Camptonville was once a flourishing mining town, but its surface mines are now almost exhausted, and it has to depend upon outside support and its agricultural resources, though its quartz interests are reviving. The former site of the town has been mined away, and the present town stands farther back. Its enterprising citizens have planted beautiful orchards, and taken much pains in improving their homes, so that Camptonville ranks high in the beauty of its private residences.

The gravel mines of Camptonville, as well as those of neighboring towns, are situated in the beds of ancient rivers, and these rivers ran almost at right-angles with the present streams. By some great convulsion these rivers were turned from their former channels and caused to run where they are at present. In being thus changed they were made to cross their old channels at almost right angles. Drainage is thus afforded, and the auriferous dirt can be washed to the very "bed-rock." These old channels may be traced by the washed gravel on the surface for miles. The gravel range of Camptonville crosses the Middle Yuba, and may be traced through the rich mines of the same character of North San Juan, French Corral, Smartsville, Park's Bar, and many other intervening mines of notoriety. At the latter place it seems to lose itself in the margin of the Sacramento Valley, and becomes extinct. The gravel filling these old channels is cemented, and is generally from fifty to three hundred feet in depth. In working these mines they blast a tunnel or a "cut" through the rim rock, and wash the gravel by means of a hydraulic. The dirt is pulverized by being swept through a long flume under a heavy head of water, and the gold is caught in riffles which are in the bottom of the flume. Mines of this character are usually immensely rich, but it takes large capital to open them, and to supply them with water. Many old miners have taken up mountain farms, and find that by raising vegetables and dairying, they can make a good living and have a little money to spare. There are a great many farms of this character in this vicinity, and although rough, they are well adapted to summer grazing. Most of the stock is driven to the foot-hills during winter.

We came to the North Fork of the Yuba at Goodyear's Bar. This town is a relic of "49," and is almost deserted. At a distance it has the appearance of a populous village, but on closer inspection we found most of its buildings to be vacant. We saw but two men, and they seemed to be looking after the lost prestige of their once lively and prosperous town. We then journeyed up the river to Downieville, a distance of four miles. The entire channel of the river was being worked, and seemed to be monopolized by Chinese. River mining is conducted on a different principle from any other, and seems to constitute a separate trade. The water is either taken up in a flume or turned from its channel by a "wing dam." After the "bed-rock" is reached and the surplus water is pumped off, the auriferous gravel is raised by a derrick, and is thrown into boxes, where it is pulverized and the gold caught in riffles.

At last we entered Downieville, a town of rare beauty, and many peculiarities. It can not be seen until the observer is within its limits, and its narrow streets give it the appearance of an

old Spanish-American town. It is singularly situated in a deep canyon at the junction of the two branches of the North Yuba. The town is overlooked by lofty mountains whose slopes are covered with forests of cone-bearing trees and underbrush; which together with rocks and cliffs, give them an extremely rough appearance. In winter the town is protected by these mountains, and while their summits are caped by snow fifteen and twenty feet in depth, its streets are free from obstructions, and its climate is mild. Fruits and flowers thrive, and Downieville is a town of gardens. Downieville used to be supported by its rich placer mines, but as these are now principally exhausted, it depends upon its quartz and deep gravel mines. Its energetic people have done much toward improving its appearance, and Downieville may be said to be a pleasant resort.

We left Downieville at an early hour the next day for the Sierra Valley. Our road was up the South Fork, and as it kept near the river the ascent was gradual. The water in the river still continued muddy, and our prospects for catching trout were somewhat doubtful. The general appearance of the country was similar to that we had passed through, excepting perhaps its superior scenery. We reached Sierra City at 10 o'clock. This town is twelve miles above Downieville, and is supported by extensive quartz mines that surround it. Our road then led us around the base of Downieville Buttes, and gave us a fine opportunity to observe those lovely peaks, rearing their hoary heads 8,000 feet above the sea. We camped on a beautiful grassy plat about five miles from the summit. We slept soundly all night, and were somewhat surprised in the morning to find ourselves surrounded by frost and the streams fringed by ice. The more elevated portions of land were covered with snow.

The timber near the summit consists of several different species of pine, and the forests are composed of rather small trees crowded closely together. The trees are tall and slender, and their trunks are covered with gray moss. At first sight one may know that he is in a country of deep snows; the limbs of the trees are bent downward; the hills bear marks of snow-slides, and the presence of snow in the month of June adds to the conviction that he is where snow-shoes are of practical use in winter.

On the summit we found beautiful green grass, and the elegant snow-plant. We then had to descend into Sierra Valley. The valley is about thirty miles in length and from five to twelve miles in width. It has its greatest length north and south; and is drained by a tributary of the Feather River. It is well adapted to growing hay, and its central part is a tule land. The farmers principally devote their attention to the raising of live stock and to dairying. The summers are short and pleasant, and the winters are long and cold. The valley has an elevation of about 5,000 feet, and its head is but 25 miles from Truckee, to which it is joined by a good wagon road. Here also are the famous Thermal Springs, whose waters are celebrated for their medicinal properties. The valley is quite thickly settled, and contains several thriving towns. Game of all kinds is abundant.

We spent several days in Sierra Valley, and concluded to go to a cluster of beautiful little mountain lakes on the northern slope of the Downieville Buttes. These lakes were a day's journey distant, and we arose early and started, while

"Afar the bright Sierras lie

A swaying line of snowy white:
A fringe of heaven hung in sight
Against the blue base of the sky."

We recrossed the summit, and at the close of day found ourselves in a most beautiful country. We were in the mountains, yet the face of the country for some miles around was comparatively level. Our surroundings were grand; the Buttes reared their snowy heads high above us; the clear waters of the turbulent Yuba went dashing by, and the many beautiful lakes, gems of the mountains, furnished abundant room for admiration.

The lakes with the exception of Gold Lake are each about a mile in length by half a mile in width, and lie in a line north and south, from two to three miles apart. The waters of these lakes are utilized by being conveyed into a large flume to the quartz mines of the Buttes. They have been raised by having their outlets dammed, some of them to the height of twelve or fifteen feet. The waters from the melting snows are thus hoarded up and carried to the mines as required. These lakes were named by early adventurers, and their names were selected on account of their different kinds of trout, and the peculiar color of their waters. Hence we find such names as Sardine, Salmon, and Gold. Each lake has several small lakes near its head, which bear the name of the large lake, modified by the expletive "little." Gold Lake is the prince of this group. Its waters have a bright yellowish cast, and it is about three miles in length. Its surplus waters finally reach the Feather, while those of the other lakes flow into the Yuba. The waters of these lakes are as clear as crystal, and so transparent that the eye can penetrate to a great depth. The bottoms are covered with beautiful gravel, which in a measure gives the peculiar tinge to their waters. The fish here are of the trout species; but trout caught from different places in the same vicinity have marked points of difference. They generally average in weight from a pound down to a few ounces. They are delicious eating, and are easily caught in early summer.

We spent our time fishing and hunting—now gliding over the smooth surface of a mountain, then climbing to the summit of a peak. After remaining in those wilds for several days, and celebrating the Fourth of July by taking a large haul of fish from one of the lakes, we turned our course homeward. But our journey homeward was not without its pleasure. We went to Sierra City and clambered half way up the Buttes, to the famous Ries Quartz Mine. This mine is nestled in a cove on the south side of the Buttes. The mine has been worked ever since California has been a State. It was first worked by Mexicans, who obtained their gold by pounding the quartz in mortars. The mine was next worked by means of arastras, and lastly by improved machinery. At present there are several mills operating in all about 175 stamps. The entire machinery is propelled by water, which is brought from the lakes we have just mentioned. The water is utilized by being made to flow over two ponderous over-shot wheels, each 60 feet in diameter. In all the different departments the company work about 180 men. The mills together with the other necessary houses resemble an inland town. The monthly proceeds of this mine average from $50,000 to $60,000, and the prospects are that it will continue good for many years, The rock averages $12 per ton.

The woolly aphis is destroying the apple crop of Oregon.

RAMBLING NOTES FROM NAPA, LAKE, AND SONOMA COUNTIES.

By Leonard Coates, Yountville.

The codling moth has made rather rapid progress in our apple orchards this year, whereas it might have been materially checked by united action on the part of the fruit growers last summer. Mr. O. B. Shaw, of Sonoma, is wide awake, and the various insect pests will find it a dangerous experiment to endeavor to obtain a livelihood in his orchard. He has thoroughly washed his trees, and by means of a piece of paper tied round them near the ground, has trapped many hundreds of the pupæ of the codling moth, and, consequently, has saved most of his crop, and next year will no doubt be rid of the pest.

The greatest enemy of the intelligent fruit grower is the farmer who fancies himself an oracle on—well, everything—and has an orchard which "don't pay," and which he therefore neglects entirely. It is in these most miserably abused and ill-kept orchards that all the ills that fruit is heir to are nourished, and from whence they are distributed all over the State. But we can do nothing, and legislatures can do nothing, because it would be "unconstitutional." Read again the cases quoted by Cooke & Son in the *Rural Press* for October 16th, which I know from my own experience are far from being exceptional ones.

I was at Dr. Strentzel's place, "Alhambra," a short time ago, and was much struck by the cleanliness and thriftiness of his orchard. It can there be demonstrated what may be accomplished by intelligent and constant care, and good cultivation. By "good cultivation" I do not mean merely plowing and harrowing, which, together with the lopping off of a certain amount of "brush" from the trees, is what so many think is all that is required in an orchard, but manuring is also needed. The Doctor has had many evils to contend with, such as misnamed varieties of fruits, and the importation from the different nurseries of various insect pests, against which he has thus far contended successfully. I would indorse the plan recommended elsewhere of washing all trees received from the nursery with whale oil soap, or some other insecticide, however healthy and clean they may appear.

None of the scale insects have yet appeared in Napa; Petaluma is the nearest place where I find they are beginning to make themselves known. The successful orchardist must live among his trees, and be ever ready to wage war to the death against these insect plagues.

A great deal has been said lately about the mildew and curl leaf on peach trees. I find on reading some of the descriptive catalogues published in the State, that many varieties which are said to curl in a given locality are quite free from that disease in Napa Valley, and those which are claimed to be free from it are badly affected by it here. The only thing to be said then seems to be: Plant only those varieties which experience has proved do not curl in the locality in which you wish to plant them—all else is superfluous, a mere waste of printer's ink.

The curculia and weevil have not yet, I believe, been discovered in California, but it would be well, I think, to anticipate them. Large prune and plum orchards are being planted; imagine the consternation if either of these pests were to make its appearance. We need to have a resident entomologist who will spend his time in the orchards of the State, that active measures may be taken to annihilate any hitherto un-

known pest as soon as it is discovered; or a competent person should be sent out from the University with instructions from the 'bug-masters' there residing. An occasional visit to an orchard can be of little or no service. A thorough entomologist must combine great study with very great practical knowledge and experience. It is just so with the phylloxera. Commissioners have made flying visits to the vineyards and have returned and made their reports, whereas they ought to live at least a year among the phylloxera vastatrix before they should dare to open their mouths to make a report. I say this with all due deference to those who by their experiments and study render great obligations to the State.

A correspondent of the HORTICULTURIST this month speaks sanguinely of grape culture in Napa Valley, and well he may, for the grape growers and wine makers together are making such enormous profits that their heads are almost turned—profits so great that in the nature of things, supposing there were no phylloxera in the background, the bubble must burst, and things resume their ordinary level. But the phylloxera is already here, and any one who likes may trace its progress, as I have done, through Sonoma Valley, over the hills into Napa, in which valley its ravages may be seen in many places. Mr. Dresil, of Sonoma, tells me most emphatically that he does not believe that any insecticide, were it as cheap and easy of access as water, could be practically applied to the destruction of the phylloxera. The roots of grape vines in valley lands go down ten, twelve, and even fifteen feet, and ramify in every direction; how could it be possible to bring sufficient liquid to permeate to the remotest roots of the vine? Mr. Dresil claims that the only thing to do is to plant the native American cuttings, which he has already done, and intends doing on a very much larger scale next spring.

I could find, during my trip, no trace of disease in any of the little orchards of Lake County, and there is much land admirable for grape and fruit culture lying idle in that portion of the State. The fruit that I met with was of most excellent quality and enormous size. Some pears which were known as the "Duchess" (but could not be "Duchess d'Angouleme") weighed over a pound, the trees being large and having a full crop.

THE SANTA BARBARA HORTICULTURAL SOCIETY.

By MRS. N. W. WINTON.

The autumn meeting of the Santa Barbara Horticultural Society was held on October 2d. A large and interested audience gathered to hear the previously announced discussion on "Plums and Prunes." The President, Mr. Ford, gave a resumé of the report of the State Society, and a discussion followed upon the points applicable to our location. Then a request was presented that Mr. E. J. Knapp, the pioneer prune raiser of our county, should give us his experience and methods. His orchard was planted in the spring of 1876, one year old from the bud. They made a fair growth the first year; the next was the dry year, and they remained mostly in dormant bud, but bore some fruit in 1878, and fruited heavily since. Many trees bore 200 pounds; one unknown variety 250. The most useful variety proves to be the Petite d'Agen prune, of which there are two hundred trees. The Hungarian is a sour prune, suitable only for drying. The German prune satisfies its horticultural conscience by blooming

four fold, and then gracefully subsides into a Rip Van Winkle repose for another year. The testimony on this point was wholly unanimous.

The soil of this orchard is a deep sandy loam, practically bottomless, eighty feet to water, and no subsoil touched until that point was reached. Another, bearing equally well, was reported as having but two feet of surface soil on the higher foot-hills in Montecito.

Mr. Knapp's method of curing is as follows: One can of concentrated lye to ten gallons of water constitutes a primary bath for them. They are next placed in evaporators, exposing them to a high degree of heat, withdrawing them suddenly, turning them over, and replacing them. This is done three times, then the heat is essentially lowered until the drying is complete; to find this point is the only difficulty, and requires experience. The sweating process is the same as for raisins and the results are pronounced by families and dealers to be a decided improvement on the old sources of supply.

The crop will probably be consumed here, as it is a favorite dessert fruit as well as valuable for cooking. They are put up in ten and fifteen pound boxes, and are sold according to grades at from sixteen to twenty cents per pound. From three to three and a half pounds of green fruit for one of dried is required, and the results in this instance have given an impetus to this department of fruit raising.

Col. Bond was called on for the result of his investigation in the direction of budding unprofitable almond orchards, which are in this locality, as in most, proving unreliable; on some farms very profitable, on the very next often bearing hardly at all. The report was therefore anxiously looked for, and was very favorable. So much so that Col. Bond had decided to graft all his trees in the spring to Petite d'Agen prune. The very few who had unwisely taken up their trees could be identified at once by their awful countenances, but these are very few, as better wisdom has prevailed. Careful culture has always brought some crop, and the days of slip-shod farming in this vicinity are, it is hoped, almost numbered. A call was made for a list of light-colored plums suitable for canning, with only a few responses. Yellow Egg, Green Gage, and Silver Prune, were indorsed, but further experiments in this direction were urged upon growers. Our autumn exhibit of pomological and agricultural products is necessarily postponed until the 28th and 29th of October, owing to the intervening District Fair at Los Angeles. The multitudinous bean crop is giving full occupation to farmers meanwhile.

FRUITS FOR CALIFORNIA.

By James Burr, San Mateo.

The best varieties of hardy fruit trees for general cultivation, in my opinion, are as follows:

Apples—Red Astrachan, Early Summer Pearmain, Summer Bellflower, Gravenstein, all good for either dessert or cooking; Baldwin and Yellow Bellflower, two splendid dessert apples; the Newtown Pippin, also the Yellow Newtown Pippin, good for the table or cooking; Porter, also a splendid apple; Rhode Island Greening, Spitzenburg, and Wagner. The foregoing, I think, will give a constant supply from July to May.

Pears—Bloodgood, Jargonell, Bartlett, Louise Bonne of Jersey, Autumn Bergamotte, Beurre Diel, Flemish Beauty, Seckel, Vicar of Winkfield, Beurre Bose, Easter Beurre, Duchesse D'An-

gouleme, Brown Beurre, Glout Morceau, and Winter Nelis. These will supply the table from July to April.

Peaches—Early Beatrice, Strawberry Peach, Red Rare Ripe, Crawford's Early, and Crawford's Late, Noblesse, Large Newington, Large White Clingstone.

Apricots—I think the Early Blenheim and Moorpark will be found all that is necessary for all uses.

Cherries—Black Heart, Early Ox Heart, Bigerreau, Napoleon Bigerreau, Black Tartarian, Elton, May Duke, and Morello, will give a good supply for all purposes.

Figs—Brown Turkey, Black Ischia, and Brown Ischia, will give the best returns.

Plums—Coe's Golden Drop, Green Gage, Imperial Gage, Jefferson, Purple Favorite, Reine Claude de Bevay, Washington, Goliath, Prince of Wales, Magnum Bonum, White Magnum Bonum, and Victoria, will supply both kitchen and table with abundance.

Nectarines—Elruge, Pitmaston Orange, Stanwick Violette Hative, and Red Roman.

Quince—The pear-shaped quince will be found the most useful.

All the above I can strongly recommend as being good and useful varieties, every one of which will give the best of satisfaction. I have no doubt many would add to those mentioned, but I for one do not wish too great a variety.

HALF AN HOUR WITH THE POETS.

By Charles H. Shinn.

Gardens, woods, open fields, and rural scenes have given pleasure to the best thinkers and writers of every age, and they are never tired of saying appreciative things about them. It has seemed to me that one could not do better than to gather up a few of the expressions which indicate pleasure in birds, flowers, trees, and nature's perfectness.

In the sixteenth century mild-hearted old John Gerarde, who knew all the flowers of his time, and who, we may feel sure, was a welcome visitor in many a prim and courtly garden of merry England, wrote in his book this on flowers:

"Through their beauty and variety of coloure, and exquisite forme, they do bringe to a liberal and gentle minde the remembrance of honestie, comelinesse, and all kinds of virtues; for it would be an unseemly thing (as a certain wise man saith) for him that doth look upon and handle faire and beautiful things, and who frequenteth and is conversant in faire and beautiful places, to have his minde not faire also."

Indeed we find endless allusions to rural scenes among the writers of Shakspeare's time, and earlier. Marlowe bids us wander:

> "By shallow rivers to whose falls
> Melodious birds sing madrigals."

Michael Drayton tells us of damask roses, purple violets, clove pinks, and sunlit marigolds. Herrick, as spring is departing, says in most musical sorrow:

> "Fair daffodils, we weep to see
> Ye haste away so soon,
> As yet the early rising sun
> Has not attained his noon."

And then, some dewy morning, he goes out and plucks primroses to whom he talks thus:

"Why do ye weep sweet babes? Can tears
Speak grief in you
Who were but born
Just as the modest morn
Teemed her refreshing dew!
Alas! ye have not known that shower
That mars a flower;
Nor felt the unkind
Breath of a blasting wind;
Nor are ye worn with years,
Or warped as we

Who think it strange to see
Such pretty flowers like to orphans young
Speaking by tears before ye have a tongue."

It is merely a pretty conceit, and yet how simply and naturally the words flow along! He is not trying to write a poem, nor is he wondering whether he can sell it when it is done. I wish more people now-a-days could write in Herrick's spirit.

Waller's "Go, Lovely Rose," is so perfect that the student must find and read it as a whole. Shakspeare offers such marvelous clusters of flowers that if we enter those charmed mysteries we shall not find time for other poets. Rare Ben Johnson and the old dramatists have the love of wild woods and blossoms. But, in later times, leaving the languid lilies of Coleridge, and even melodious Moore, let us listen to marvelous Keats, who "shrined himself in twenty perfect years."

"So I straightway began to pluck a posy
Of luxuries bright, milky, soft, and rosy;
A bush of May flowers with the bees about them;
Ah, sure no tasteful nook could be without them;
And let a lush laburnum oversweep them,
And let long grass grow round the roots to keep
them,
Moist, cool, and green, and shade the violets
That they may bind the moss in leafy nets."

Here are sweet peas on tiptoe for a flight,
With wings of gentle flush o'er delicate white,
And taper fingers catching at all things,
To bind them all about with tiny rings.
What next? A tuft of evening primroses,
O'er which the mind may hover till it dozes;
O'er which it well might take a pleasant sleep
But that 'tis ever startled by the leap
Of buds into ripe flowers."

Shelley has a way about him whose fascination no one could long resist. In his dream-garden he says:

"There grew pied wind-flowers and violets,
Daisies, those pearled Arcturi of the earth,
The constellated flower that never sets;
Faint oxlips; tender blue-bells, at whose birth
The sod scarce heaved; and that tall flower that
wets
Its mother's face with heaven-collected tears,
When the low wind, its playmate's voice it
hears."

Then, too, how pleasantly Leigh Hunt speaks of sweet and shower-born flowers. It is in all the school-readers, a part at least. Leigh Hunt would have us see the rapture of seed, leaf, bud, blossom, fruit, in their endless round.

"Think of all these treasures
Matchless works and pleasures,
Every one a marvel, more than thought can say.
Then think in what showers
We thicken fields and bowers
And with what heaps of sweetness half stifle
wanton May:
Think of the mossy forests,
By the bee-birds haunted
And all those Amazonian plains, lone lying as
enchanted."

But in the midst of these we need not lose sight of our own American poets. Philip Freneau, now nearly forgotten, has a kind word for the white and fragrant wild honeysuckle. Bryant has found the Painted Cup whose "scarlet tufts are glowing in the greenlike flashes of fire," and he knows the Golden Rod, and the shy Fringed Gentian. Yet, after all, this field is too wide for the space at our disposal. We think of the faint purple of Rhodora, of springtime's trailing Arbutus, and summer's floating Lilies, and autumn's scarlet Lobelias, until the memories of those who have loved the homes and gardens of America brightens our path. Then we grow sure that while the world lasts there will be men and women to study, love, and write about the flowers.

Before pruning fruit trees see that they are clean. Pruning and cleaning in skillful hands go together. A sharp eye and a keen pointed knife are about the most efficient destroyers of insect pests. In pruning, every bit of dirt, every insect nest, should be destroyed.

Correspondence.

ROSES IN THE OAKLAND FOOT-HILLS.

EDITOR HORTICULTURIST—Dear Sir: I find from experience that our roses do not do as well here in the warm foot-hills of Oakland, and in the months of June, July, and August, as they do in San Francisco during the same months, but our roses here as a general rule have done much better during the spring and fall of the year than they do on the San Francisco side. Roses here are now blooming almost as well as in the month of May, and will continue so until cold weather. The reason, I think, that our roses do not do so well for those three months named, is that our climate is much warmer, and the night air is light, warm, and dry, whereas in San Francisco it is generally heavy and foggy, and as a natural consequence there is more moisture, so the buds can form better, and they show themselves in all their perfect colors. During these months named our roses flowered in profusion, but are not nearly so perfect; they are blighted, except a few which I have in my collection that I can recommend. Among the tea roses, La Pactole, in the hot dry weather as a rule, does well the year round, and also Bougere, Clara Carnot, Elize Sauvage; of hybrid perpetual roses that bloom perfectly are La France, Duke of Wellington; of Bourbon and China roses are Appoline, Hermosa, Agrippina — this is the best crimson rose to bloom that I know of; it flowers here all winter. La Marque and Louis Philippe are good.

The following is a list of roses that do well, and are worth the attention of the admirers of good roses: Teas—Bon Silene, Bougere, Cheshunt Hybrid, Devoniensis (I consider it one of the finest teas), Gloire de Dijon, Isabella Sprunt, Madame Charles, Marshal Niel, Marie Von Houtte, Perles des Jardins, Safrano, La Pactole, Eliza Sauvage, Souvenir d'un Ami, Clara Carnot, Triomphe de Luxembourg. Hybrid Perpetuals—Duke of Wellington, Emperor de Maroc, General Jacquiminot, General Washington, John Hopper, La France, Louis Von Houtte, Madame Chas. Wood. Bourbon and China roses—Appoline, Hermosa, Mrs. Bosanquet, Agrippina, Louis Philippe, Archduke Charles, Daily White. I can not recommend Cloth of Gold, as it is a very shy bloomer with me. La Marque is certainly one of the finest white roses.

This is all that I can recommend at present. I have imported a great many others, most of which are new from England. I got them last spring. I planted them in a separate bed and will give them a fair trial and report to your valuable magazine. I will at a very early date give you some notes on the best shrubs for suburban homes.

P. J. KELLER.

Oakland, October 24th, 1880.

A GLIMPSE OF A GOLETA GARDEN.

EDITOR HORTICULTURIST:—Goleta is our post office, but we live back towards the mountains among the foot-hills. Our eighty acre farm is nearly all pasture land, but we have a great many fruit trees and grape vines; among the latter are the Gordo Blanco, Muscat, and Sultana. We also raise an abundance of vegetables. The four years previous to last winter that we lived here I never saw any frost, and even last winter it killed nothing but some tomato vines. I have a good many flowers, and I dearly love them all. I love them for their fragrance and their beauty. I love them for the pure thoughts they inspire.

A lady in Illinois sent me a Happy Thought Geranium. The leaves are bright green with white centre. I planted seeds of it and two came up. One has green leaves with a black zone, and the other has leaves almost entirely white, only a little shading of green on some of them. I have one part of my garden for wild flowers, and it is not the least attractive corner of my realm. I have told you very little about my garden, and I fear nothing very interesting either.

MRS. W. B. HOLDEN.

Goleta, Santa Barbara Co., Oct. 18.

[May such gardens as these bloom and prosper with more and more brightness, year after year. It is perhaps the simplest test of real garden-love that one shall not confine their interest to cultivated flowers. People who make a mere pretense of liking flowers are always caught in this way. They admire gaudy, double flowers; they look at the modest pets of nature, and call them "weeds." All the true flower-lovers like the wild flowers also, and sometimes like them much the best.—ED. HORT.]

SOME DEFECTS IN OUR TIMBER LAWS.

EDITOR HORTICULTURIST—Dear Sir: It is customary to speak of the redwood resources of California as inexhaustible, but any one visiting the eastern slopes of the coast mountains will find them almost denuded of timber fit for milling purposes. In the section to which I allude, viz.: Santa Cruz and Santa Clara counties, shingle mills have cut out the best of the timber left as too inaccessible by the saw-mills, and in many locations even all that was fit for split stuff has been worked off. Where fire has not swept the land is covered with wastage of the redwood or of oak that have been peeled for their bark. A large portion of this land is government land, from which the government has received no return for timber cut, and which, as matters now stand, will never become improved.

The *modus operandi* of stripping the land is about as follows: A man owning a team goes into the timber district and squats or buys a claim; he then hires a number of choppers to cut pickets from the best redwood, and ties or cord wood from the remainder. The chestnut oak is peeled for its tan bark, the hard woods where easily accessible are cut into stove wood, and the whole marketed as speedily as possible; the teamster being the only one profiting by the operation, the choppers being paid barely enough to feed themselves on rough fare and to furnish the occasional spree. *Bona fide* settlers are continually robbed by such proceedings, and our land laws unfortunately afford them no remedy. It should be the first duty of the United States officials to stop all timber cutting on government lands. The lands should then be surveyed and settlers secured in their rights. Every 160 acres in those hills will support a family, and such families while clearing garden spots and otherwise improving could cut and market the timber without wastage. Not having to compete with timber skinners, they could afford to make homes. The little gulches and flats so numerous in that vicinity produce fine fruits of every variety as well as vegetables, for which there is an abundance of water for irrigating.

The honest settler labors under the same disadvantage against thieves as the honest merchant does against the dishonest bankrupt. In one vicinity where teamsters hold the upper hand, pickets in the hills are valued at six or seven dollars per thousand; they pay

three dollars per thousand for gulching, and sell them for eighteen dollars per thousand at the railroad ten miles or less away, the teamster netting from eight to eleven dollars per thousand. In another vicinity where the settlers own the land teamsters are glad to haul pickets to the railroad at four dollars per thousand, thus allowing a fair stumpage price to the settler.

If the land laws were so amended as to allow the *bona fide* settler, after entering his claim and paying the necessary fees, to make a reasonable deposit and then proceed to market his timber and improve his place, it would tend to improve the hill section very much, filling it with homes, and protecting honest settlers from those who persistently rob them without even the cover of the good intention of honest settlement.

Watsonville, Santa Cruz Co.

Notes From the Sand Hills.—Editor Horticulturist :—A frost in this section severely injured our corn, which is all late, on the 12th and 13th of Oct. Ice formed on the 13th in exposed locations. My Blount corn (planted a little) was so much loosened by the rain of the 7th, that the winds succeeding have blown most of it down. There are from four to seven ears on each stalk.

Speaking of grape vines, I have always pruned my sweetwaters like any other vines, to five or six eyes, and got no grapes; this year sickness prevented my pruning them, and I got a fair crop of grapes. I shall experiment in the same way on other varieties.

J. B. H.

J. B. Saul, of the Oak Shade Orchards, Davisville, writes as follows: A portion of our orchard is bearing heavily this year. A severe storm from the north, on the first of the month, did us serious damage. I have paper bandages on every bearing apple and pear tree. Examine them every week, and occasionally find a worm, but suffer no loss. Without this precaution we would be as badly off as others. This remedy is certain.

BRIEF BULB NOTES.

Try some double and single Snowdrops and some Scillas.

Pancratium rotatum is a lily of the south. Pure white flowers, easy cultivation, and lovely for the garden.

The value of flower roots sent from Holland a year or two ago was nearly £60,000, and one English grower imports annually 160,000 tulip bulbs.

Hyacinthus candicans is a new species, with flower stems three to four feet high, with about twenty-five large pure white flowers; blooms in July and August.

The Anemones are beautiful spring flowers, of many colors, and are well adapted to our Pacific Coast climate. Both double and single are worth planting. Plant now. The bulbs are very cheap. They may be left in the ground for several years. Sandy loam suits them best.

There is no more ornamental plant for greenhouse or parlor culture than the Cyclamen. It grows readily, blossoms freely, and remains a long time in flower. The soil should be equal parts of turfy loam, leaf mould, and silver sand. The whole secret of growing Cyclamens to perfection is light air and a low temperature.

Crocuses may be grown in glasses, with the same treatment as the hya-

cinth. For crocuses in the garden choose a deep, light, rich soil, in an open situation; plant the bulbs in October, November, or December, two or three inches deep, and about two inches apart, covering them with the fine mould. The crocus, used for edging beds or borders, or planted in lines along the edges of walks, or in clumps, has a beautiful effect during the early spring, if the colors are tastefully arranged.

In planting crocuses in wire baskets, procure some green moss, with which line the inside of the basket to prevent the mould from going through; fill up with the soil recommended, and plant the bulbs on the top, two inches apart, half covering them; then place moss between the bulbs to give the surface a beautiful green appearance. When they begin to show flower, a liberal supply of water will be required.

A writer in the *Garden* speaks as follows of one of our California lilies: "Lilium Parryi is not, I consider, the showiest of American lilies, but it is one of the most elegant. Here it has seven flowers on a stem five feet in height; their color is a deep citron-yellow, with a few crimson spots; they stand out horizontally, and are tubiform and about four inches in length; the pollen is reddish brown. Mine is the best variety. Some of them appear to be much paler and not so large flowered. It is a very elegant and graceful lily."

Hyacinths will succeed in any well-drained soil. If of a very adhesive nature, add two or three inches of sharp sand and about the same quantity of well-decayed manure; then dig the soil eighteen inches deep, well mixing the sand and manure with the soil. Sandy loams require nothing more than the addition of manure and deep digging. Plant, when the soil is dry, in rows about nine or ten inches apart, and a foot between the rows. The crown of the bulb should be three or four inches under the surface of the soil.

PLANT AND GARDEN NOTES.

If ants are troublesome on plants sprinkle a little salt about.

Time to prune roses and shrubs. Put out cuttings of desirable sorts.

The double forms of Potentilla are very valuable for rock-work.

Strelitzias are fine plants for associating with ferns in rocks or rustic work.

The Marshal Niel rose is much improved in color by budding on the Lady Banks.

Persian Iris and Ranunculus are very beautiful bulbs, which thrive in California.

Plant some Tulips—Duc Van Thol, Double, Parrot, and all the other varieties.

Downing's *Landscape Gardening*, and Scott's *Suburban Home Grounds* are well worth study.

Turn plants in pots around occasionally, to insure an equal amount of light to all sides alike.

The most striking successes among hybrids have been among roses, clematis, begonias, and rhododendrons.

One single florist in the neighborhood of London sends to market annually more than 80,000 plants of one description of pelargonium alone.

No rose, taking all the good qualities of a rose together, will surpass the Gloire de Dijon, though golden cups of

Marshal Niel may be richer in color, and the fragrance of La France recalls, as no other rose does, the luxurious fragrance of Oriental otto of roses.

Most kinds of annuals flower much better next spring, when sown at this season of the year. A warm, rich border should be chosen, and the seed put in at once.

The Island of Corsica has some sixty species of flowering plants peculiar to it, while the British Isles possess no single kind which is not also found elsewhere.

Honey dew is a secretion from the foliage, resulting from the change of starchy matter which always exists in the leaves of plants, into saccharine.

Prof. Rothrock is of the opinion that the early natives of California smoked the leaves of Nicotiana Clevelandii, A. Gray—a species only quite recently described. It is a small plant with small flowers, and it was found by Prof. Rothrock only in association with the shell heaps which occur so abundantly on the coasts of Southern and Central California.

The Salpiglossis is a beautiful half-hardy annual that grows to about two feet in height, and produces funnel-shaped flowers of a peculiar richness, very curiously and delicately veined and marbled as though marked with a pencil. They are of easy cultivation, preferring a light, sandy soil, and should be oftener planted.

The following receipt for destroying weeds is going the rounds: Procure some thirty gallon casks and have them filled with gas-water from the gas-works. This should be applied to the gravel walks with a rather fine rose, as very little is required to kill the weeds. Take care the water is kept at least four inches from the border grass.

The Acroclinium is one of the most beautiful of everlastings. They do not appear very important when growing in the garden, but when picked and dried they retain their form and color perfectly, and may be made up into the most beautiful winter bouquets.

Climbing roses for pillars should be planted in a very rich soil, as they will then put forth strong central branches of eight to ten feet in length; these, when fastened to the stakes, will furnish a plentiful supply of lateral blooming shoots for many seasons.

Says the *Gardener's Monthly:* When on a hurried run in Boston early in the summer we passed over to Prof. Sargent's and saw his huge Azalea decora; one of the finest specimens perhaps in the world. The writer made a rough estimate of the number of flowers in bloom on it as 7,000. When the seed-vessels were afterwards counted it was found that there were 7,646 of them.

ITEMS ON THE VEGETABLE GARDEN.

The cabbage plant is a gross feeder, and some good soluble plant-food must be supplied to the soil in sufficient quantities to keep it growing thriftily.

If heavy rains prevail, we must wait till the surface becomes fairly dry. Nothing is gained, but a great deal lost, by attempting to work upon ground when it sticks to your feet like birdlime.

Some vegetable seed may be sown as early as the ground can be worked. Of such are: beets, cabbages, carrots, cress, cauliflower, celery, lettuce, parsley, parsnip, onion, pea, radish, turnip and spinach.

Cauliflowers require a rich moist loam.

In the old countries where they are so extensively cultivated, beds or ridges are thrown up on the low lands and the ditches between the beds are kept filled with water. During the hot and dry months of summer the water is frequently poured upon and around the plants. With this treatment cauliflower of the largest size and finest quality are produced.

In kitchen garden work there are two extremes to be avoided: being always behind the season, and always ahead of it. The soil should not be worked when it is so wet that it is sticky, and will afterwards dry into a hard mass—and on the other hand it should be worked as soon as it is dry enough.

FRUIT AND ORCHARD HINTS.

Order trees early.

Purchase trees of responsible nurserymen.

Remove, in pruning, as much old and worn-out wood as possible, and recruit with fresh wood enough to fill its place.

There is room for profit in small fruits if near to a market. Blackberries and currants paid well last season.

Peter Henderson has issued a beautiful colored plate of new Strawberries, showing Glossy Cone, Harvey Davis, Black Giant, Jucunda, Seth Boyden, Monarch of the West, Sharpless, and President Lincoln.

Isham's Sweet Apple is a seedling of Bailey Sweet from Southern Wisconsin, fruited eight years. Fruit large, fine, red, more oblong than its parent, a good grower, very productive; of much finer grain, more juicy, and a much better keeper than the Bailey Sweet; quality best. Keep through winter.

Editorial Department.

SALE OF THE HORTICULTURIST.

Since the publication of the October number the proprietors of the California Horticulturist have sold all their rights and interests to the *Pacific Rural Press*. The two publications will be consolidated, and all the subscribers and exchanges of the Horticulturist will receive the *Rural Press* for the remainder of the year. Our correspondents and friends will find room, and a welcome in the circle about the hearthstone of the *Rural*, to which we wish long life and prosperity.

Our present number closes our connection with and responsibility for the Horticulturist. The publishers will devote their time more exclusively to their other journals, and the editor, whose farewell words appear elsewhere, will concentrate his horticultural work upon the San Francisco *Bulletin*. Our thanks are rendered to our subscribers, correspondents, and exchanges, on this coast and elsewhere.

The Publishers.

FOR THE LAST TIME.

San Francisco, Nov. 5th.

Dear Readers of the Horticulturist: Parting words are hard to say. As explained elsewhere, this is the last number of this publication in its present form, and under its present management. The time has come when I must tell you good-by, and thank you for your kindness, your generous appreciation of our work, your charity for our shortcomings. Readers of and writers for the Horticulturist, we have believed in each other, and the circle we formed and the work we did shall not lightly be forgotten. We are friends forever, and we will search most eagerly for

news and wayward hints of each other's welfare.

Your many virtues, O gentle readers, of the past years, urge me to strict and yet smiling confession. I can not be entirely sorry that I am now to escape the editorial burden of the HORTICULTURIST. Since, last year, I went upon the editorial staff of the *Bulletin*, the duties and pleasures not alone of journalism, but of the study and preparation which are absolutely essential to ultimate success in that field, have become more and more onerous. You can all understand that if a young writer keeps pumping out ideas incessantly, without stopping long enough to study the work of the masters of literature, he will make a pitiable failure. No real success can be earned without fit payment of toil, and slow preparation year by year. And, feeling this deeply, as I do, I hope the readers and friends with whom my relations have been so inexpressibly pleasant, will think of me as a part of that great machine, the Modern Newspaper, which daily throbs with new heart-beats, and daily speaks to the souls of men in words of praise, warning, entreaty, rebuke. It is a wide field, and a great work in which one's whole nature may well be enlisted, and it is also good preparation for literature of another sort, for magazine work, and for the making of books.

My heart goes out with especial gratitude to those friends who have written such friendly letters, and helpful articles, and to the editors of the weeklies and monthlies which have spoken so many genial words of praise and of encouragement. I have prized them all; I have, in my heart of hearts, treasured these things as precious memories. May life be wonderfully sweet and bright for you all. May flowers bloom about your homes, and birds sing there, and the voices of merry children thrill the soft twilight. May each and all of us help to make this Golden State a realm where art and literature thrive. Let us continue to believe in California.

I hope that my many kind correspondents will continue to let me know of their welfare. My permanent address is "care of *Daily Bulletin*, San Francisco." I shall always like to hear about the gardens, the roses and lilies, the arch little girls and boys, the mountain towns under the snow peaks, the brown school-houses in valley and ravine. These, and you, friends of friends, whom I have known so long, I shall remember henceforward and forever.

Your sincere friend,

CHARLES H. SHINN.

MONTEREY WANDERINGS.

In October there was an Agricultural Fair at Salinas City, in the great Salinas Valley, Monterey County. This seemed to form a fitting time for a brief visit. We left San Francisco one morning, borne on the swift wings of steam across the counties of San Mateo and Santa Clara, and reached Salinas City in the afternoon. The route thither is well known to most of our readers. Millbrae, Redwood City, and the charming villages and towns along the fertile and prosperous peninsula; San Jose, hid in greeneries and tangles of roses; bustling Gilroy, and sedate Watsonville—the tale of all these has been told heretofore. But no pen could fitly describe the blue ridges, and the wide Gilroy Valley; the perfectness of the foot-hills and peaks of the Coast Range, and the ridges along the upper Pajaro River; the sense of delight awakened by the fertile autumn-fields of Pajaro and Salinas. It is a splendid land which men have as yet only begun to conquer.

Near a little flag-station in the eastern end of Pajaro, on the Monterey side, there is a school-house by the railroad track, and there, as the train went by, were the children out at play, with their remembered energy and turbulence. For this, be it told, was one of the schools in which this humble editor had aforetime taught. So we waved a handkerchief—ah! would they understand; could they have remembered us all these years? There was a gust of excitement, a chorus of shouts and cries, a rush of eager feet, a waving of hands and hats. Down to the fence they came, a merry tornado, in swift welcome as the train swept past. Blessings on the brown old house, and on the light hearts which daily gather there, and on the patient teacher at his hourly toil. May those we knew, and those who are to come after them, find and love the blossoms of the world, and likewise its hidden songs, year after year.

Near the northern limits of Salinas Valley, surrounded by rich lowlands, and by occasional sloughs and strips of tule, yet not far from the foot hills on the east, is Castroville, a place of some prospective importance as the junction of the Monterey and Salinas branches of the railroad. For years past it has been supernaturally quiet, though for some time blessed with a newspaper. Moss Landing, near Castroville, is a noted shipping point for cereals, potatoes, beans, and other products of the surrounding country. This trade is so prominent a feature that the construction of a canal along the Templadera slough to near Salinas has its advocates. Others favor the construction of a narrow gauge from Moss Landing to Salinas City.

The next town south of Castroville is Salinas City, the county seat. Its site is well chosen with a view of commanding the trade of the county, and it must always remain the leading town of the valley. Times have been dull for a few years past, but are now reviving. Development of varied industries, the planting of extensive orchards in the not remote future, to support canneries and drying establishments, will prove the salvation of this whole region. The resources of the county are very large, and as yet hardly mapped out, much less developed. Large ranches must go into the hands of actual settlers, for some of the largest grants in California are in this county. Two men in Monterey County own 80,000 acres of land apiece. Some of this is waste land, but much of it is of the best quality for grain or fruit. Princely domains these, but one longs to see these lands more closely settled.

Some of the best lands in Monterey lie along the Salinas River, where several noted dairies are situated. Thousands of acres in this section are still to be cleared from willows, cotton-woods, and blackberry vines. When cleared, this land is of almost exhaustless fertility.

Besides Salinas Valley, there are several of lesser note in the county, some towards the coast, and others further south. In some of these the annual rain-fall is often insufficient. Others promise well for vineyards and orchards. All are used for grazing purposes.

The Annual Fair at Salinas City was not strongly agricultural. Horse-flesh reigned supreme, as in most other district fairs of California. The exhibit made at the pavilion did not truly, or fully, or even approximately, represent the valued resources of this and adjoining counties. For this neglect there can be no excuse whatever. Some superb fruit was shown from Pajaro Val-

ley, and from the vicinity of Salinas. A San Miguel apiarist showed beautiful white sage honey; a few sacks of wheat and potatoes were visible, and that was about all. This, be it remembered, was for a territory forty or fifty miles square, and embracing many varieties of soil and climate, so that every product of the temperate zone and many of the tropics might have been grown successfully.

The district is prosperous, though the county needs a greater population, and can offer many inducements, so her leading men should another year have the horticultural display better arranged, and made much more complete. To this end the co-operation of farmers in each section should be secured months before the fair takes place.

STUDENT CLUBS FOR WINTER.

These long winter evenings appear to have been made for the one purpose of encouraging study, reading, and social intercourse. The winter evening writing-schools and spelling-bees were vital elements in that New England which has peopled and influenced half a continent. In many parts of California schools are kept all winter, as that is the pleasantest season, and the long evenings are thus secured for mental labor. The foundation of many a life-success may thus be made by earnest boys and girls. On labor the pillars of the world rest; from labor all music and beauty is born; beginning rudely in rocks and tempests, the paths of labor widen into pleasant lands where happiness abides, where quiet words, kind deeds, the fragrance of flowers and continual singing are.

One of the ways in which the winter evenings may be utilized is for several persons of kindred tastes and aspirations to organize a literary club of some sort. They need not give it any ambitious name, but it should be for study and reading rather than for social enjoyment. It should begin with a definite plan, followed closely, and should involve a good deal of positive work, done for its own sake. This last is an important point. It is sorry business to study from a vague idea that it is proper or useful; the sort of study which makes cultivated men and women is done for its own sake, with ardor and delight, with hunger and thirst, with deep yearnings and hopes untold.

Many inviting fields of study may be found. The young students might profitably take up some epoch-marking author, such as Chaucer, Shakespeare, or Goethe, spending a whole winter upon the chosen subject. They might consider a period, such as the Elizabethan Era, and after studying about the authors of note, might well find out something about the manners, dress, society laws, and politics of that era, so that they should at last arrive at some clear understanding of how people lived then, and what memorable things they did. Still another way for students to approach such subjects would be by a grouping process. Through age after age trace the development of some central thought. If it be church architecture, study the evolution of the Gothic cathedral, of the Turkish mosque, of temple, shrine and tomb in many lands and ages. Whatever plan is chosen, the members of the typical students' club should each one contribute a share, and some honest preparation should be made for each meeting.

Devote a large space in the garden to herbaceous perennials. The home-like, old fashioned "mixed border" should be mainly occupied by perennials.

THE BRISBANE BOTANIC GARDENS.

The annual report of Walter Hill, of the Brisbane Botanic Gardens, is now at hand. We need not apologize to our readers for laying a synopsis of this report before them, for it is in many ways suggestive.

We learn that the previous rainy season was of unusual length and severity. During 146 days 58.45 inches of rain fell. Some ornamental flower beds have been renewed twice. In spring they were filled with plants of Geranium, Iberis, Schizanthus, Aster, Stock, Dianthus, etc.; in summer with Coleus, Stachys, Cineraria, Petunias, etc. Borders along walks were planted with Agaves, Yuccas, Bromelias, and Allamandas. Upon adjoining slopes are Tea, Coffee, Cotton, and Cinnamon plants. This department also contains plants of Macrozamia, Cycos, Bowenia, Stangeria, Catakidozamia, and Encephalartos. Among the collection of palms in rich soil, and thriving well, are specimens of Cocos, Sabals, Oreodoxas, Latanias, and Pandanuses, besides the thatch-palm of Jamaica (Calyptronoma Swartzi), the Mexican Sugar Palm (Brahea Dulcis), and the Vegetable Ivory of the Solomon Islands (Sagus Amicarum). Forty-eight new varieties of roses have been added to the rosery. Teas and Noisettes thrive best.

Prof. Hill reports that during the past year the following plants have flowered and fruited: Spathodea companulata, Chrysophyllum imperiale, Toxicophlæa spectabilis, Poinciana regia (var. lutea), Ptychosperma Hilli, Kentia minor, Quercus subra, Vanda Batemani, Saccolabium Hendersonianum, Saccolabium giganteum, Dendrobium Bensoni, Dendrobium Falconeri, Phatænopsis grandiflora (variety lutea), Cypripedium Stonei, Cypripedium Parishi, and the Grevillea Palmeri.

The most interesting of the new fruits has been the Japanese Black Peach, introduced in 1878. It is about the size of a duck's egg, dark red flesh, juicy, well flavored and free from disease.

In the tree department, or State Forest reserve, much appears to have been done. The Plane tree, Ash, Honey Locust, Sugar Maple, Cedars, etc., have been propagated and sent to different localities. There is quite a demand for Banana plants. A portion of ground has been set apart for fibre-yielding, medicinal, and dye plants.

Seventy-eight varieties of sugar-cane are grown at one experimental plantation, and all have thrived well. It is reported that 6,000 acres of land have been taken up for sugar-growing along two of the rivers of Queensland.

Twenty varieties of rice are under cultivation, including the Caroline rice, which seems to do best on uplands in Queensland, though in the United States it is chiefly grown on lowlands. The Punjab wheat from India is claimed to be rust-proof.

In respect to coffee, a large area of land has been taken up. The Botanic Gardens have distributed 10,000 plants. Many plants of cocoa (Theobrama Cocoa), have been distributed and grow well. Plants and seeds of the Chinese tea were disseminated and proved a success. The culture of tobacco has been encouraged and is increasing rapidly. Plants of Ginger, Gamboge, Rubber-tree, Black Pepper, Cloves, and many other species of economic value, have been distributed at favorable points.

In some degree this brief synopsis shows what our Australian friends are doing. They display commendable zeal, and the sight should encourage us also. We must develop the resources of

California in the same energetic way. Where is our Botanic Garden?

Use climbing roses to cover a sloping bank, as their flexible branches can be pegged to the ground in any direction. They will form a beautiful carpet of foliage and flowers, the dark crimson and white varieties blending with peculiar elegance.

Editorial Notes.

THE GARDEN.—The most beautiful horticultural weekly in the world is the *Garden*, published at 37 Southampton Street, London, and edited by Mr. Robinson, well known as the author of many useful works on gardening topics. In studying the work which is being done in different countries by horticultural writers, we are forced to the conclusion that a new field of literature is being developed—the outdoor and suburban element of happiness in life is to have its full expression. Poetry and art unite with the most accurate science to find the meaning of wide nature, and the lesson of her leaves and flowers. The gardens of the future are to be more beautiful because more natural than any of the past, and they are to be loved and written of by men and women of trained literary powers. Ah what poems, tales, and sketches, glad with sun-ripples, fragrant with unimaginable delights of rose, violet, and mignonette, the world will yet find, deep-hid in gardens of mirth and song! Fairer homes; new lights in literature; purer pleasures, and brighter hopes—these are to be the rewards of the toilers who write "leaflets," and "notes," and paragraphs in such worthy publications as the *Garden*.

VICK'S MONTHLY FOR OCTOBER.—This interesting and elegant flower-monthly gives a colored illustration of the perennial larkspurs, which are so useful for cut flowers and for general display. The correspondence department is unusually full, and the pleasant gossip treats of a large number of interesting subjects. We always wish well to *Vick's Monthly*, of Rochester, New York.

THE TORREY BOTANICAL CLUB BULLETIN.—This valuable publication for September is particularly strong on the fern question. John Williamson discusses pleasantly about "Ferns on the Cumberland." There is a beauty and sense of fitness about all that Mr. Williamson writes. Mr. G. R. Kleeherger's "Notes from California" are disappointing. He can do much better with the material which old Trinity affords. Southern Trinity is one of the richest fields in this State for the botanist. "Botanical News" is, as usual, one of the best features of the monthly.

THE FLORIST AND POMOLOGIST.—The editor of this beautiful monthly must feel glad of his success. The numbers are charming both typographically, and, what is of much more consequence, in methods of work and literary finish. In October, for instance, we are treated to a colored picture of the Brown Turkey Figs, and to another most lovely one of picotee pinks (which always were favorites of ours). Then, as regards articles, there are notes on orchard-house, vines, wall fruits, suburban gardening, auriculas, garden gossip, etc. The publishers are Messrs. Kent & Co., No. 23 Paternoster Row, London.

SARGENT'S CATALOGUE OF FOREST TREES OF NORTH AMERICA.—It is generally known that the tenth census of the United States, now being prepared, will contain a report on the Forest Wealth of the United States, and that Messrs. Sargent, Parry, and Engelmann, Forest Commissioners, have recently visited this coast to study our timber resources. Some time ago C. S. Sargent, in connection with and preparative for this survey, published a catalogue of the Forest Trees of North America with blank pages intended for field notes and observations. Copies of this were sent to different persons, in the hope and belief that a fund of practical information would thus be obtained to be used in the forthcoming census report. If this number of the HORTICULTURIST reaches any persons who are willing to devote a little time to the benefit of science, and of the country at large, let them try to make some report on the topics, sending their notes to Charles S. Sargent, Brookline, Massachusetts. Let them especially note geographical range of any species, the place where it reaches its greatest perfection, the most favorable geological information, the dimensions of the largest specimens, the local names of any species, the uses to which the wood is applied, and other products, such as dyes, edible fruit, medicine, etc. We should have made a note of this interesting matter some months ago, but press of work has caused its neglect. Earnestly, however, we would urge our friends to do what they can in helping Mr. Sargent. He is engaged in a great work, and one for which he is pre-eminently fitted. Those who met him during his recent visit to this State know how hearty, genial, and capable a man he is, and their wishes for his prosperity will follow him hereafter.

NEW ORANGES OF MERIT.—The Florida Fruitgrower's Committee lately recommended three varieties of orange as of unusual value there. They are described as follows:

Magnum Bonum—Size, large to very large; flattened; color light clear orange; eye set in slight

cavity; stem inserted in a narrow depression; skin very smooth and glossy; thickness of skin two-sixteenths; longitudinal diameter, three inches; transverse, three and five-eighths; color of flesh, light; grain very fine, tender, and melting; fruit very heavy and juicy; juice sweet, rich and vinous.

Homosassa—Size, about medium, somewhat flattened; very heavy; color bright; skin remarkably smooth and satiny; pits very few and shallow; skin remarkable for its toughness and density, and thinner than that of any variety thus far examined; eye dark, varying from one-eighth to two-eighths of an inch in diameter, and set in a flattened surface, about three-quarters of an inch in diameter; pulp very fine, and remarkably juicy and sweet; flavor full, vinous and sprightly; membrane covering segments of pulp very thin, and small in quantity.

Nonpareil—Size, above medium; somewhat flattened; color ordinary; eye broad and set in a slightly depressed cavity; stalk inserted in a level, scarred surface; skin, three-sixteenths thick; longitudinal diameter, two and three-quarters of an inch; transverse diameter, three and a quarter; color of flesh, ordinary; grain, fine; pulp, melting and tender; juice, sub-acid and vinous.

New Fruits.—Among the new pears offered by Eastern nurserymen this year are the Beurre de l'Assumption, large, August; the Brockworth Park, large, handsome, September; the Souvenir du Congress, very fine, ripening before Bartlett; and the Goodale, large, good flavor, October. Among the new cherries are Empress Eugenie; Montmorenci Ordinaria (of the Richmond class); Luelling, an Oregon seedling; Olivet; and Louis Philippe, late. Of plums the Weaver will succeed even in Modoc and the upper Sierra region. New peaches of merit are Bower's Early, freestone, white flesh; Honeywell, and Marshall's Late. The last is a large and fine yellow peach, ripening between the Smock and the Salway.

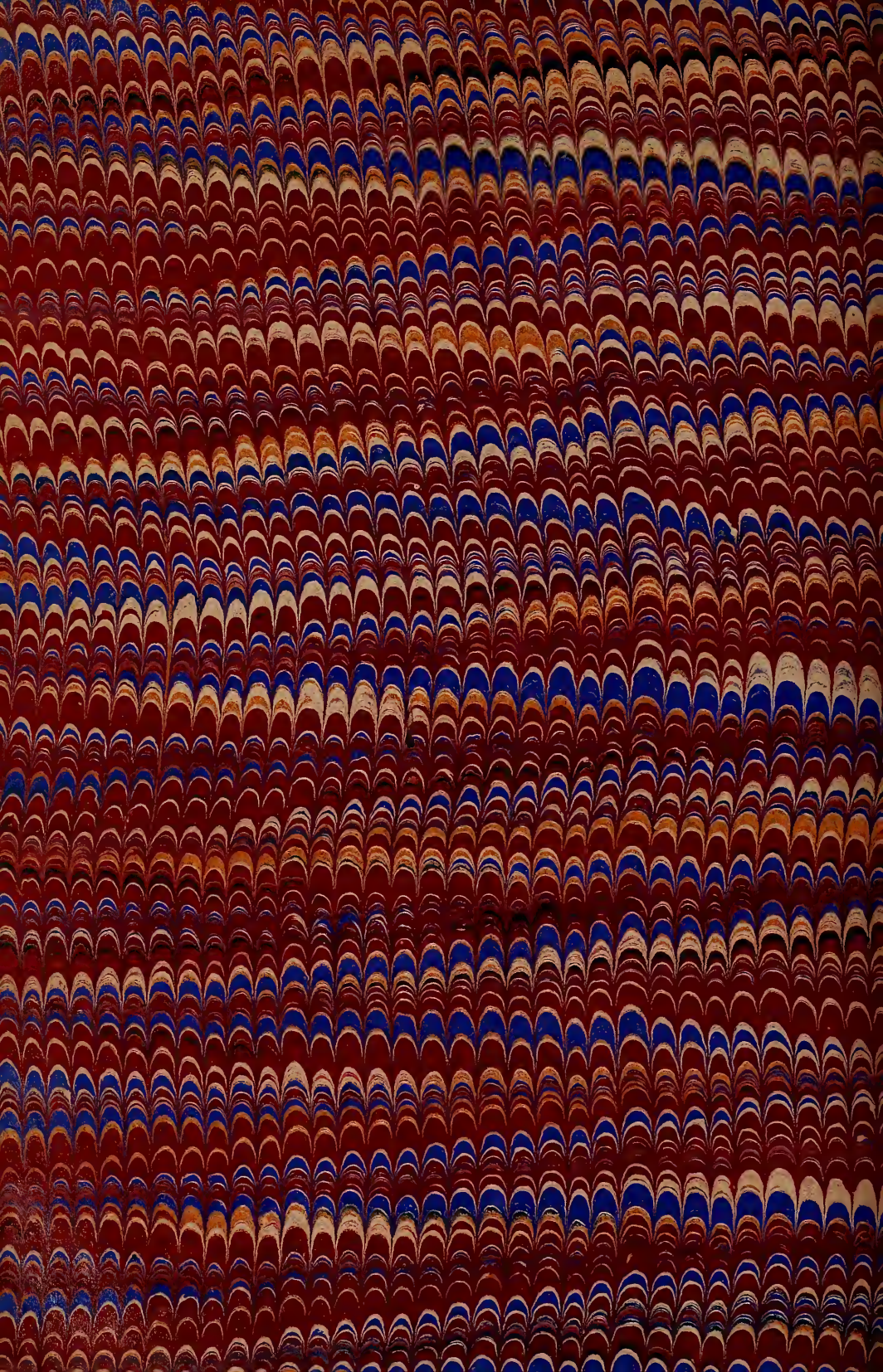
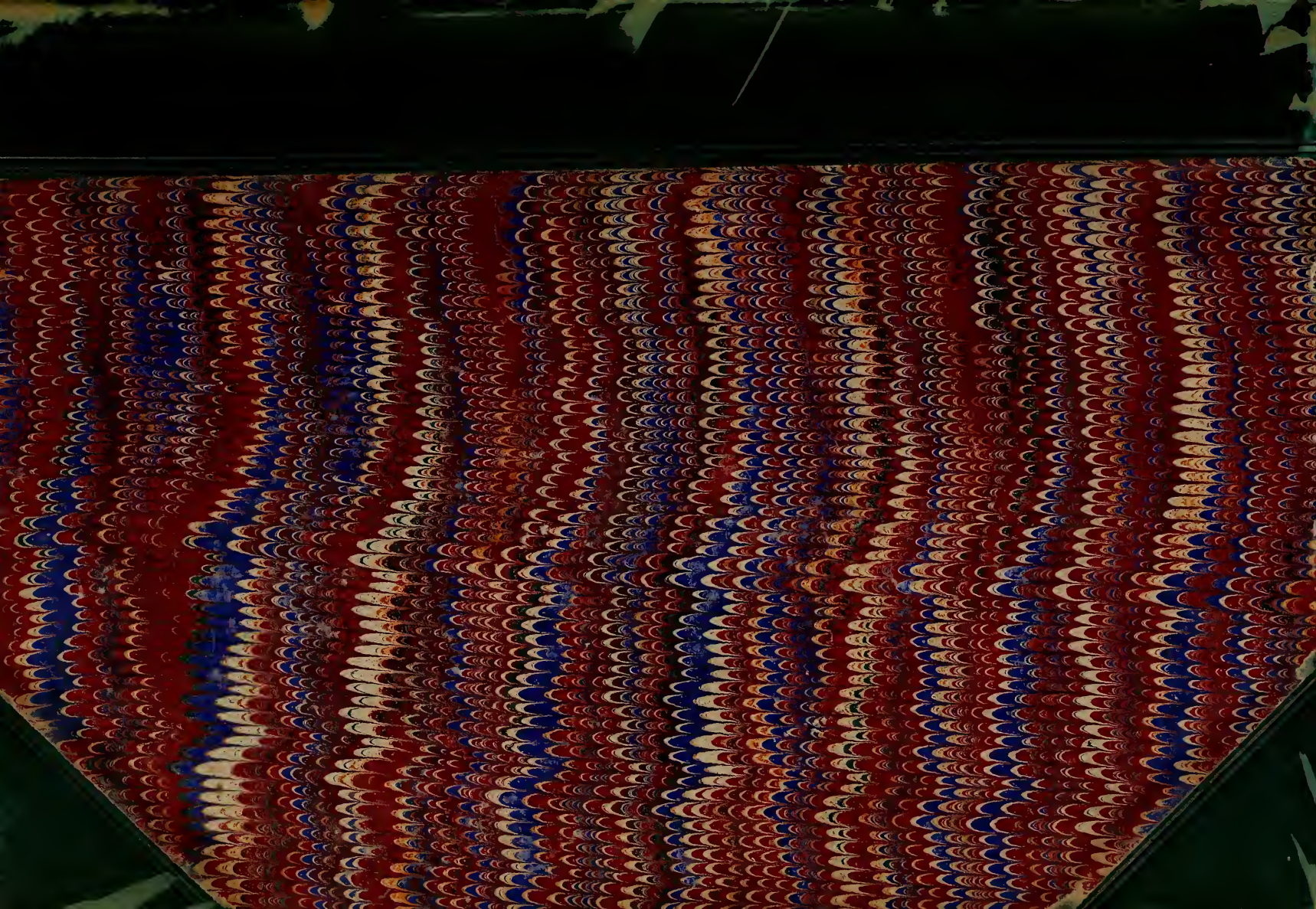
Eleven Strawberries.—Storrs, Harrison & Co. recommend eleven varieties of strawberries for family use. They are the following: Longfellow, Warren, Windsor Chief, President Lincoln, Glendale, Sharpless, Monarch of the West, Crescent Seedling, Seth Boyden, Charles Downing, and Jucunda.

The St. Louis Fair.—St. Louis claims the credit of getting up the greatest agricultural fair in America. The receipts this year aggregated $100,000. During one day the attendance was over 80,000. Thursday of the fair week was made a gala day by the city, and all business, even custom house, courts, etc., were given up.

Substitute for Grass on Lawns.—We see many of our exchanges are talking of substitutes for grass in ornamental grounds. Even the English papers talk of it. Now if they in their very moist limate find this sometimes desirable, how much more must we. There is no doubt that in California one of the most difficult and expensive things is a good lawn. Of course we can not give it up altogether, but is it not better to attempt only so small a grass plot that it can be well kept, and then cover other portions of the ground with ivy, or sedums, or perhaps saxifrage, or any other hardy low growing plant or vine, which will take care of itself, and will give a pleasant green for the eye to rest upon.

Moss Mulching for Pots.—Peter Henderson has been experimenting with moss mulching for his pot plants. He mixed bone dust with the moss and covered the surface of the pots, and is so well pleased with the result that he considers it the greatest improvement of anything that he has tried in all his thirty years' experience.

The San Mateo Horticultural Society.—The quarterly meeting of the Horticultural Society of San Mateo County was held on October 12th, in Germania Hall, Redwood City, John McLaren presiding. Mr. James Burns exhibited thirty varieties of pears and apples, all excellent fruit. Mr. Morse spoke on the cultivation of the peach, advising for long lived trees to plant the stone where the trees were intended to grow, even if the trees had to be cut low down for grafting or budding—that is if planted on a limited scale. If planted extensively, he advises planting trees already worked. He states that the yellow varieties would nearly always reproduce themselves from seed, but the white varieties could not be depended on. For curled leaf he recommended trying green vitriol (sulphate of iron), and blue vitriol or sulphate of copper. James Burns read a paper on what he considered the most hardy and profitable varieties of fruit for California. The selection he made was considered excellent to meet all purposes. Mr. John McLaren promised to renew the subject of California Wild Flowers if he found anything of note in flowers by next meeting. Subjects for discussion at the next meeting were "Curled leaf in Peaches," by Dr. Morse, and "The Cultivation of the Tuberose," by Thomas Wood and John Burr.

A New Vine.—A French traveler in Africa writes home to his government of what seems "too good to be true." A vine of high quality, herbaceous in its character; a vine fertile and beautiful, with delicious fruit, which may be cultivated like a dahlia, and which has true herbaceous roots. It is probably an exaggeration or some error of description, but the description, said to be that of a botanist, is sufficient to excite curiosity.—*The Garden.*

Large Peach Orchard.—The peach orchard of John Parnell, in Troup County, Ga., is the largest in the world. It covers 250 acres of land, and will probably yield $70,000 this year.